Group Instruction for Students with Autism Spectrum Disorders:
Implications for Professional Development

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Abstract

A multiple case study design was used to conduct a professional development needs assessment of special education teachers’ group instruction practices for students 3 to 8 years old with autism spectrum disorders (ASD). Three preschool teachers and two kindergarten to grade 2 teachers participated in this study. Using both quantitative and qualitative methods, this study investigated teachers' attitudes, beliefs, skills, and prior knowledge providing insight into their experiences. Teachers' instructional practices, including the use of applied behavior analysis (ABA) principles and discrete trial teaching, are examined. A gap analysis was conducted to examine participants' actual practices versus "recommended practice" during group instruction.

Final conclusions were based on the entirety of quantitative and qualitative information derived through analysis of the individual cases, as well as a cross-case comparison. Findings indicate a need for training in a wide range of ABA strategies and procedures. Developing individualized curriculum and planning instruction that targets students' needs across all developmental domains, specifically peer social interaction and communication, were also areas of deficiency suggesting a need for further research. Environmental constraints impacting teachers' delivery of effective group instruction were also identified.
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CHAPTER I

Introduction

The Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) describes a set of disorders called Pervasive Developmental Disorders that impact development across domains. The five disorders that fall under the umbrella of Pervasive Developmental Disorders constitute a syndrome and are often referred to in the research literature and in practice as autistic spectrum disorders (ASD). The major characteristic features of ASD are: (a) difficulty in developing social behavior and social competence in maintaining relationships with other people; (b) difficulty in understanding communication and developing speech and language skills; and (c) engagement in repetitive activities with limited areas of interest (American Psychiatric Association, 1994). These features are evidenced through a multidimensional set of behavioral symptoms. Adding to the complexity of ASD is the fact that each behavioral symptom may be expressed on a continuum from mild to severe.

Each of the major characteristic areas has specific identifying behaviors that are evaluated for diagnosis. Social interaction deficits may be in nonverbal behaviors such as eye-to-eye gaze, facial expression, and gestures. Although students with ASD demonstrate a range of emotions, there are disturbances in affect and a lack of emotional or social reciprocity. There is a delay in, or lack of, spoken language without attempts to compensate through alternative modes of communication. Early imitation and joint attention skills, such as pointing out or showing objects to share interests with others, are often noticeably absent, as is symbolic or pretend play. Repetitive behaviors, typically
self-stimulation or a preoccupation with parts of objects, are often present. Additionally, there are often difficulties associated with changes in their environment and adherence to nonfunctional routines or rituals (American Psychiatric Association, 1994).

The American Academy of Neurology and the Child Neurology Society (Filipek et al., 2000) report that ASDs are now considered common disorders of childhood. The incidence of children diagnosed with disorders on this spectrum is currently 1 in 500. These children vary across the continuum in their cognitive potential; some have near- or above-average cognitive abilities (Myles & Simpson, 1998); however, as many as 50% fall within the range for having mental retardation (Freeman, 2000). Children with these disorders have a highly variable rate of learning and present a wide range of abilities and disabilities across all developmental domains. The diversity of these students presents a significant challenge for special education teachers who are assigned to implement their Individualized Education Program (IEP) within the context of public school settings.

Some general strengths and weaknesses are reported in children with ASD. Strengths are noted in tasks with a reduced social load, such as basic visual processing (visual discrimination learning); Piagetian sensorimotor abilities (development of reflexes into organized patterns of behavior); and sustaining attention on items of interest. General deficits reported, in addition to the characteristic deficits described above, include conceptual problem solving and meta-representational ability. Other consistent areas of cognitive weakness are in the selectivity and shifting of attention (Courchesne et al., 1994); executive functioning (Ozonoff, Pennington, & Rogers, 1991); pragmatics, the social aspects of language (Tager-Flusberg, 1994); social awareness (Wetherby &
Prutting, 1984); and theory of mind, the ability to attribute beliefs and other mental states to other people (Baron-Cohen, 1990). Many of the cognitive deficits in students with ASD are directly related to their social deficits and these areas of development are interwoven and develop interdependently (Green, Fein, Joy, & Waterhouse, 1995). Green and her colleagues state, “Abilities related to communication, social cognition, and play obviously must develop in a social context.” (p. 25). Concurrent interventions across multiple developmental domains seem indicated to address these related and multifaceted characteristics.

The literature has consistently reported that students with ASD experience difficulties in generalizing skills mastered to the variety of novel experiences of everyday life where the skills are required. Stimulus over-selectivity theory (attending to idiosyncratic, and/or irrelevant cues) has been proposed as the basis for the deficits in generalization (Lovaas, Koegel, & Schreibman, 1979). However, Klinger and Dawson (1995) theorize that an impairment in the process used by students with ASD to form conceptual categories during learning may underlie their impaired generalization skills and difficulties in responding to unpredictable, novel situations. Regardless of the basis for this deficit, there remains an identified need to promote generalization during instruction.

Snell, Martin, and Orelowe (1997) reported that there is a need to provide professional development opportunities for special education teachers who serve students in (a) low incidence or (b) severe disabilities. Students with ASD comprise a portion of the special education population that may fall into both of these categories. ASD is a
complex and often perplexing disorder. Instruction must be individualized for each student's unique learner characteristics and functioning level within each developmental domain (i.e., cognitive ability, verbal and communicative ability, gross and fine motor). Some of the unique learner characteristics of students with ASD must be continuously monitored (e.g., level of motivation) and may require that instructional adjustments be made during teaching.

Research has shown that students with ASD require precise, systematic teaching interactions to ensure that learning occurs (Gresham & MacMillan, 1997; Koegel & Koegel, 1995). This places a direct responsibility on the special education teacher to design and implement a comprehensive and multifaceted instructional program for students with ASD. Thus, the teacher must have adequate knowledge of the learner characteristics associated with ASD, the specialized instructional techniques required to facilitate their learning, and the classroom resources to implement such programs.

Special education teachers are typically responsible for the delivery of instruction to a group of students simultaneously within the context of their public school classrooms. Their ability to do so effectively, insuring that each student's IEP goals and objectives are addressed in the process, is essential. Skills that are predominantly demonstrated in the natural environment in groups (i.e., observational learning, leisure, and communication skills) can best be generalized if taught within the group context (Brown, Holvoet, Guess, & Mulligan, 1980). Additionally, the ability to successfully engage in a group activity is important for students' long-term vocational outcomes. Social interaction and communication skills are also necessary for this success. Group
instruction provides a natural opportunity for instruction in these skills, as well as skills across the other developmental domains. Therefore, it is important that teachers of students with ASD have the necessary knowledge, skills, and resources to effectively implement group instructional methods.

**Definitions**

For the purpose of this study, the terms (a) needs assessment, (b) professional development, (c) recommended practice, (d) applied behavior analysis, (e) discrete trial teaching, (f) generalization, and (g) group instruction are defined in this section.

**Needs Assessment**

"Needs assessment" is an analysis of the differences between current and appropriate (or recommended) knowledge, skills, behavior, or attitudes (Lockyer, 2001) in order to determine what can be done to address deficiencies. A needs assessment incorporates a variety of data gathering techniques, incorporating the perspectives of various stakeholders, so that factors surrounding the events or process under study can be defined, or analyzed, to better understand it. Data gathering tools may include (a) interviews, (b) observations, (c) surveys, (d) focus groups, and (e) extant data analysis (Schnackenberg, Luik, Nisan, & Servant, 2001).

**Professional Development**

"Professional development" refers to experiences that provide the practitioner with opportunities to improve or change professional practices by changing attitudes, acquiring new knowledge, and gaining or enhancing skills. This implies an updating of teachers' knowledge to include current, research-based instructional strategies. The
anticipated outcome of professional development goes beyond simply increasing awareness of these practices. It is intended to provide opportunities for educators to develop their skills and competencies for improved student outcomes (Middleton, 1996). The ultimate goal of professional development is to provide experiences that lead to improvements and changes in professional practices.

**Recommended Practice**

“Recommended practice” refers to those strategies that have an empirical research base and/or have been documented in peer-reviewed journals as having demonstrated positive outcomes for students with ASD. It infers that the strategies are appropriate and recommended based on comprehensive knowledge of current experts in the field.

**Applied Behavior Analysis**

“Applied behavior analysis” refers to behavioral practices that “make obvious the importance of the behavior changed, its quantitative characteristics, the experimental manipulations which analyze with clarity what was responsible for the change, the technologically exact description of all procedures contributing to that change, the effectiveness of those procedures in making sufficient change for value, and the generality of that change” (Baer, Wolf, & Risley, 1968, p. 97).

**Discrete Trial Teaching**

“Discrete Trial Teaching” is “a structured method of presenting stimuli in systematic drills toward the goal of purposefully and rapidly attaining mastery on a skill or skill sequence in a controlled setting” (Jensen & Sinclair, 2002, p. 46). DTT has historically been referred to as discrete trial training (Mulligan, Guess, Holvoet, &
Brown, 1980; Lovaas et al., 1981). Although this term is still used in the literature, terms such as discrete trial instruction (Harris & Delmolino, 2002; Taubman et al., 2001) and discrete trial teaching (Leaf & McEachin, 1999) are more current terms to describe this instructional strategy. The terms are used interchangeably in the literature.

**Generalization**

“Generalization or generalized” is when a widespread change in behavior is obtained across diverse stimulus conditions, responses, and time without comprehensive programming (Stokes & Osnes, 1988). Narrow stimulus control has been cited as the problem behind most generalization failures (Stokes & Baer, 1977).

**Group Instruction**

“Group instruction” refers to teacher led instructional activities that are presented to two or more students simultaneously. Group instruction is an instructional format that can be used across the curriculum and the school day. It is not characterized by a specific location or strategy.

**Purpose of the Study**

The primary purpose of this study was to identify professional development needs for special education teachers related to group instruction for students with ASD. The needs assessment provided information on why training is needed, targeting special educators’ beliefs, attitudes, resources, and practices in conducting group instruction for students with ASD. Because teachers’ attitudes, beliefs, and prior knowledge are platforms for internalizing new knowledge it is necessary to accurately understand these
components of current practice to provide experiences that will ultimately lead to changes in practice (Lieberman, 1995).

The needs assessment also identified knowledge and skills related to group instruction that are needed by the teachers. The purposes that have been suggested by Rossett (as cited in Holton, 2000) for conducting a needs assessment are to collect information about: (1) optimal performance, (2) actual performance, (3) how key sources feel, (4) what is causing the problem, and (5) solutions to close gaps between optimal and actual performance. Identifying the specific elements of "recommended practice" for group instruction addresses the first of these purposes. Additionally, there is a growing demand for outcome and performance accountability in the Hawaii Department of Education (HDOE), as evidenced by the corrective actions taken in response to the Felix Consent Decree. This consent decree resulted from a class action suit (Felix vs. Waihee) filed against the State of Hawaii on behalf of students with mental health needs that included students with ASD. By identifying information about recommended teacher performance regarding group instruction for students with ASD, it is possible to make a comparison of actual performance to recommended practices providing a measure of accountability.

A secondary purpose of this study is to identify the essential issues, topics, and skills that should be incorporated into a professional development curriculum; as well as the types of activities that will facilitate transfer of this training to everyday teaching practice. Information gained in this study will be useful in linking the content of professional development activities to identified needs (Montague, Warger, & Harris,
1997) and to daily experiences (Garet, Porter, Desimone, Birman, & Suk Yoon, 2001) of the special education teachers of students with ASD. The literature suggests that professional development activities are more likely to lead to change in practice when they are based on a needs assessment (Grant, 2002) with the targeted group (Otis-Wilborn, Winn, Ford, & Keyes, 2000).

Nationally, in response to the requirements of IDEA, a variety of professional development activities are offered for special educators. Various professional development activities have been conducted in Hawaii to train special education teachers in Hawaii in “recommended practice” instructional methods. The most intensive and ongoing training activity conducted by the HDOE to meet this need has been a series of one-week (30 hour) applied behavior analysis/discrete trial teaching (ABA/DTT) institutes. In addition to didactic instruction, this training has provided the participants with instructional experiences and coaching to implement ABA/DTT with students who have ASD.

A final purpose of this study will be to assess whether the special education teachers have generalized the skills taught in the ABA/DTT Institutes from one-to-one instructional situations to group instructional arrangements. It has been reported that generalization may not occur when training does not contain common elements and conditions that exist in the natural environment where the skill is to be demonstrated (Ducharme, Williams, Cummings, Murray, & Spencer, 2001). As the ABA/DTT Institutes did not provide specific training in group instruction methods employing these
strategies, this study provides the opportunity to assess for generalization by conducting a "hopeful" probe (Stokes & Baer, 1977).

Significance of the Problem

The need for professional development opportunities for special education teachers is clearly articulated in federal law, as well as in the literature. Federal law requires that states ensure the availability of trained personnel to provide direct services to students identified with disabilities. Two of the key components outlined in the Individuals with Disabilities Education Act (IDEA), Part B (P.L. 105-17, 1997) address these issues (Middleton, 1996). The two components of IDEA referenced above are: (a) comprehensive system of personnel development and (b) personnel standards, sections A and B. These require, respectively, that the state ensures that (a) there is an adequate supply of qualified personnel by having a comprehensive system of personnel development in place and (b) the state require retraining for personnel who do not meet the highest requirements in the state standards for adequate preparation and training for specific positions.

This year there was national recognition of the lack of trained teachers providing services to students with ASD. The Congressional Autism Caucus introduced bill H.R. 4728, The Teacher Education for Autistic Children (TEACH) Act of 2002. The sponsors stated, "This bill will help to expand upon the educational opportunities for children with autism by giving their teachers the tools to teach them better" (Special Education Report, 2002, p. 1 & 4).
It is well known that there is a shortage of special education teachers across the nation, resulting in unqualified personnel filling many special education positions (Snell, Martin, & Orelove, 1997). Special education teachers leaving the field contributes to this shortage. Whitaker (2000) found that attrition among special educators was approximately 9% to 10%. This is higher than the overall rate for educators of approximately 6%. The literature regarding mentoring of special education teachers indicates that instructional adaptation to meet the unique needs of students and effective teaching strategies are two of the most frequently addressed topics during mentoring sessions (Gibb & Welch, 1998). Students with ASD present unique and challenging learner profiles thereby requiring specialized instructional strategies. Also, the diversity in the functional levels of students with ASD produces a need for individualized instructional methods. Research has identified a need for specialized training for teachers of students with ASD to provide them with the tools to meet these challenges (Kohler & Strain, 1997; Smith, 2001; Sperry, Whaley, Shaw, & Brame, 1999).

Special education teachers entering the field require additional content training for the many competencies that are required of them on the job. Beginning special education teachers who find their jobs frustrating and overwhelming are twice as likely as mature teachers to leave their jobs (Rosenberg, Griffin, Kilgore, & Carpenter, 1997). Effective group instruction for students with ASD requires that the teacher manipulate many variables simultaneously. The complexity of this task necessitates specific training so that teachers achieve competency. Feelings of frustration, associated with a lack of knowledge and skill in understanding the instructional needs of their students with ASD,
should decrease as teachers' knowledge and skill increase. Billingsley & Cross' study (as cited in Whitaker, 2000) examining the factors associated with attrition of special educators found a strong correlation between special education teachers perceived level of support and their willingness to remain in the field.

In Hawaii, the Felix vs. Waihee Consent Decree, Implementation Plan (1995) identified the lack of adequately trained personnel to provide services to students in the Felix class as a significant issue. Corrective actions required the development and implementation of a statewide Autism Training Plan and numerous subsequent activities to increase the number of adequately trained professionals available to provide direct services to students with ASD. ABA techniques have been demonstrated to be effective with students with ASD (Harris, & Delmolino, 2002; Matson, Benavidez, Compton, Paclawskyj, & Baglio, 1996). Ongoing statewide training to increase teachers’ knowledge and skills in implementing ABA techniques and other intervention strategies is continuing as a result of the Felix corrective actions. However, no studies have been conducted to determine whether the training activities undertaken have resulted in the implementation of effective group instruction methods in classrooms serving these students.

**Research Questions**

The research questions that this study will seek to answer are:

1) What are the current beliefs, attitudes, skills, and practices of special education teachers of students with ASD in regard to group instruction?
2) Have the special education teachers who received intensive training in ABA and one-to-one DTT instruction generalized those skills to group instruction?

3) How closely do special education teachers' current skills and practices match "recommended practice" group instruction methods for students with ASD?

4) What are the professional development needs of special education teachers of students with ASD with respect to group instruction methods?
CHAPTER II:

Review of the Literature

This review of literature has been conducted to provide a basis for understanding the use of Applied Behavior Analysis (ABA) during group instruction (i.e., adult directed instruction conducted with a group of two or more students) with students with ASD. It begins with a definition and brief overview of ABA and its application in educational interventions. Included are separate overviews within the section on discrete trial teaching (DTT) as an instructional strategy and generalization as they are foundational to the research questions that will be addressed in this study.

The next section of this review of the literature will be devoted to group instructional methods. It will provide a review of the literature on the seminal research on effective group instruction methods with students with severe disabilities. Research conducted with students with severe disabilities has demonstrated that there are procedures and practices that are effective when conducting group instruction (Bambara, Warren, & Komisar, 1988; Brown et al., 1980) with students who have many similar difficulties with learning as those experienced by students with ASD.

The research on group instruction with students with ASD is reviewed in the final section. This portion of the review of the literature provides a comprehensive look at a variety of instructional strategies and settings in which group instruction has been implemented with students with ASD. The research spans preschool through high school grade levels. Of particular importance to this proposed research are those studies that demonstrate the efficacy of ABA based group instruction where DTT was implemented
with students with ASD (cf., Kamps et al., 1992; Strain et al., 1996; Taubman et al., 2001).

**Applied Behavior Analysis**

Applied Behavior Analysis (ABA) has been defined as “the process of applying sometimes tentative principles of behavior to the improvement of specific behaviors while simultaneously evaluating whether or not any changes noted are indeed attributable to the process of application, and if so, to what parts of the process” (Baer, Wolf, & Risley, 1968, p. 91). Since that time, ABA principles and techniques have accumulated an impressive history of empirical research. The research shows that ABA procedures are an effective technology for producing socially significant behavior change in people with a range of disabilities, including those with ASD (Anderson & Romanczyk, 1999; Matson et al., 1996). There are many ABA procedures; (e.g., prompting, shaping, functional assessment, reinforcement, etc.) each with its specific uses and advantages. These procedures can be applied flexibly, in a variety of ways and settings (Simpson, 2001). Practitioners adhering to a true ABA philosophy use any and all of these procedures that are necessary to achieve the desired behavioral change (Green, 2001).

The ABA procedures are based on the principle of operant conditioning: where a behavior is strengthened if followed by reinforcement or diminished if followed by punishment (Skinner, 1953). The events that follow a behavior are referred to as consequences and include all environmental changes that may occur. The consequences may be changes that the practitioner arranges or they may occur outside of the practitioner’s control, such as peers’ laughter or an item being broken. The
environmental events that occur before a behavior are antecedents or stimulus events. In an educational environment, these are often an instruction, question, or the presentation of a task by a teacher or related service staff.

The educational application of ABA requires that specific characteristic elements be followed. Elements that are necessary for an educational intervention to be considered under the ABA umbrella are: (a) noninferential assessment; (b) frequent collection of observational data; (c) targeting clearly, observably defined behaviors/skills that are deficient or excessive; (d) teaching in a systematic antecedent – response – consequence cycle; (e) assessing data and making adjustments in instructional procedures when the data indicates that adequate progress is not being made (Green, 2001). Practitioners manipulate antecedent and consequent events while assessing the effect on the targeted behavior. The systematic application of well-designed ABA procedures result in efficient and clinically significant behavioral improvements (Green, 2001). A few of the ABA procedures that have been used with students with ASD are discrete trial training (Lovaas, 1987), incidental teaching programs (McGee, Morrier, & Daly, 1999), pivotal response training (Koegel et al., 1989), and time delay (Wolery, Ault, & Doyle, 1992).

Discrete Trial Teaching

In the research literature, DTT was originally referred to as discrete trial training (Mulligan et al., 1980; Lovaas et al., 1981). Although this term is still used in the literature, terms such as discrete trial instruction (Harris & Delmolino, 2002; Taubman et al., 2001) and discrete trial teaching (Leaf & McEachin, 1999) have been used to describe
the same ABA instructional strategy. The terms are interchangeable throughout this document.

Within a comprehensive ABA program where many procedures are employed, DTT is often used as a one-to-one instructional strategy for acquisition of new skills and to gain automaticity on rote skills. Some limitations of DTT are (a) students may not learn to initiate behaviors in the absence of clear cues, (b) if conducted under tightly controlled environmental conditions there may not be any transfer of skills acquired, and (c) it is labor intensive with the teacher needing to continuously provide cues (Smith, 2001). Other ABA procedures must be combined with and/or incorporated into DTT for children to initiate the use of their skills and to generalize them across settings (Jenson & Sinclair, 2002; Simpson, 2001; Smith, 2001). Group instruction provides a format in which many ABA procedures can be incorporated to improve generalization. There are two seminal research studies in which group instruction employing DTT was used effectively, one with students with severe disabilities (Brown et al., 1980) and another with students with ASD (Koegel & Rincover, 1974).

In practice, DTT involves basic teaching units called trials that have a distinct beginning and ending, thus each teaching unit is "discrete." Each trial has four to five parts:

1. **Cue:** instruction, question, or visual task presentation.

2. **Prompt:** assistance provided to the child to ensure correct responding to the cue. Prompts are provided at the same time or immediately following the cue and are only provided if deemed instructionally necessary by the teacher.
3. Response: child gives a correct, incorrect, or avoidant response to the cue.

4. Consequence: feedback provided to the child that is varied contingently upon the child’s performance. Reinforcement is provided on trials that meet the teacher’s criteria, informational or corrective feedback is provided on trials that do not.

5. Intertrial interval: brief pause (approximately 3-5 seconds) before presenting the cue for the next trial (Smith, 2001).

Advantages of using DTT are that: (a) it is a precise format that clarifies the teacher’s expectations for the child; (b) it provides individually tailored instruction to meet the child’s needs; and (c) each trial is short, providing the opportunity for many trials in a brief period (Smith, 2001).

Skills can be taught using several basic formats of discrete trials, massed versus spaced or distributed. In massed trials, the same cue is presented on each subsequent trial, providing numerous sequential repetitions. Using a massed trial format has numerous drawbacks, including a reduction in attending and discrimination (Green, 2001). Both spaced and distributed formats of discrete trials have a period of time occurring between two trials for the same skill. In a spaced trial there is a rest period of non-instructional activity occurring during the intertrial interval. Trials are considered distributed when they are separated by at least one other trial for a different skill. Spaced or distributed trials are considered to provide greater durability and increases in responding in the natural environment. Using a distributed trial format where skills being
taught are placed in their naturally occurring sequence enables a student to learn the relationship of the skills to the context in which they are used (Mulligan et al., 1980).

Lovaas (1987) conducted seminal research on preschool children with ASD using one-to-one discrete trial teaching procedures and a curriculum that addressed social, language, cognitive and self-help skills. He concluded that although the process was highly effective for acquisition of skills, the children did not generalize the skills taught to other functional settings. A long-term outcome study indicated that children in the experimental group in this early intensive behavioral intervention study had preserved their gains in intellectual functioning and had maintained higher levels of adaptive functioning than the controls. The children in the experimental group had been out of treatment for up to 12 years with a mean of 5 years at the time of this follow-up (McEachin, Smith, & Lovaas, 1993).

Since this seminal research, there have been numerous studies where DTT was used effectively to teach children with ASD skills in a variety of domains (e.g., communication, social interaction, and self-care). However, a number of other ABA techniques, such as incidental teaching, soon followed DTT as instructional strategies of choice that are more effective in producing spontaneous generalization (Jensen & Sinclair, 2002). Also, DTT can be included in natural environments, embedding the trials within child directed activities using varied materials and functional natural consequences (Harris & Delmolino, 2002).

Skillful implementation requires training in DTT procedures, curriculum development, and troubleshooting when problems arise. Smith (2001) states,
"Unfortunately, there is a substantial shortage of teachers who have such qualifications and although professionals are working to alleviate this problem, it is likely to persist for the foreseeable future" (p. 90).

**Generalization**

Generalization refers to “relevant behavior under different, non-training conditions (i.e., across subjects, settings, people, behaviors, and/or time) without the scheduling of the same events in those conditions as had been scheduled in the training conditions” (Stokes & Baer, 1977, p. 350). In this seminal work, nine methods were identified to promote generalization. These methods are:

1) **train and hope:** examination of stimulus and response generalization following a behavior change intervention.

2) **sequential modification:** scheduling behavior-change programs in every condition where the behavior is desired.

3) **introduce to natural maintaining contingencies:** choosing behaviors that will meet natural reinforcers in the environment.

4) **train sufficient exemplars.**

5) **train loosely:** vary stimuli and exhibit minimal control over the responses allowed so as to maximize sampling of relevant dimensions for transfer.

6) **use indiscriminable contingencies:** making the ready discrimination of contingencies less predictable through random or haphazard delivery.
7) program common stimuli: making sure that there are sufficient social and physical stimulus components occurring in common in both the training and generalization settings.

8) mediate generalization: teaching a behavioral response that is likely to be common in other problems and constitutes sufficient commonality, such as incorporating language and/or self management procedures.

9) train “to generalize”: prompting and reinforcing occurrences of the generalized behavior (pp. 350 - 351).

The “train and hope” and sequential modification method are obviously the least analytical; although, the “train and hope” method was reported to be the most frequently used to examine generalization at that time.

Stokes and Osnes (1989) have reconceptualized the principles of generalization into three categories: 1) exploit current functional contingencies, 2) train diversely, and 3) incorporate functional mediators. Each of these categories has specific methods that define it. The first category, exploit current functional contingencies includes (a) determining and recruiting natural consequences of behavioral responses, (b) modifying maladaptive consequences, and (c) reinforcing occurrences of generalization. The second category, train diversely, includes using sufficient stimulus and response exemplars and making antecedents and consequences less discriminable. The final category, incorporate functional mediators, includes incorporating common salient physical and social stimuli and incorporating self-mediated physical, verbal, and covert stimuli.
There has long been a recognized need to plan for generalization of responding when instructing students with ASD (Handleman, 1979). In fact, teaching of generalization needs to occur throughout the child’s day as a regular part of instruction (Heflin & Alberto, 2001; Jensen & Sinclair, 2002). In the review of research conducted by Matson, Benavidez, Compton, and Baglio (1996) generalization is reported as one of the most difficult challenges facing teachers of students with ASD. Techniques that were shown in the literature to result in improvements in generalization were incidental teaching and the natural language paradigm. Both of these techniques are conducted in the child’s natural environments and provide naturally occurring reinforcers. Studies also indicated that having students with ASD learn to emit targeted behaviors around others who are part of their natural environment (peers, siblings, or parents) improves generalization.

The frequent need for generalization of newly acquired behaviors is widely accepted. This is as true for typically developing students and adults as it is for students with disabilities. However, in a study of consultation and generalized programming, the researchers reported that there was no direct empirical evidence that teachers implemented the skills that had been shared during consultation (Riley-Tillman & Eckert, 2001). In a recent reevaluation of the assumptions of school-based consultation, it was noted that “…there is considerable empirical basis for assuming that teachers will not consistently generalize and accurately discriminate in the absence of some type of programming for this distal BC (behavioral consultation) outcome” (Noell & Witt, 1996, p. 199).
Summary

There are many empirically based procedures that can be employed in a comprehensive ABA program for students with ASD. Each procedure serves a purpose and they can be used flexibly in a variety of ways and settings to modify the behavior of children that are typically developing as well as those with disabilities. An instructional strategy that has been used successfully with students with ASD for the acquisition of new skills and to develop fluency in rote skills is DTT. The advantages and limitations of this instructional strategy must be evenly weighed and other ABA strategies employed for students with ASD to become functionally independent and capable of responding to the natural environment.

When new skills are acquired, generalized responding is a necessity for all students and adults. This is one of the greatest challenges for students with ASD. A substantial research base supports the importance of planning and of incorporating the teaching of generalization throughout the day for these students. Individual techniques associated with generalization, such as sequential modification, can be of some use; however, to see generalized responding in natural environments it is necessary to incorporate the full range of strategies that have been identified to promote generalization.

Group Instruction Interventions

Research

Group instruction using an individualized curriculum sequencing (ICS) model and a DTT method has been demonstrated to be an effective and efficient instructional
strategy for teaching new skills to students with severe disabilities (Bambara, Warren, & Komisar, 1988; Brown et al., 1980). In the ICS model, the individualized objectives for students are not manipulated to fit the structure and content of the group instruction; rather the group instruction is designed around skills drawn from the needs and objectives of each student. Besides being three times more efficient in terms of teacher time, it can be structured for both acquisition and/or maintenance of skills.

A review of the research conducted by Mulligan, Guess, Holvoet, and Brown (1980) provides relevant information regarding the various formats of discrete trial instruction and its application as an instructional method for students with severe disabilities. Evidence documented in this review supported that skills were "learned better" when a spaced (separated by a non-instructional activity) or distributed (separated by trials from other skills) discrete trial sequence was used. They reported the hypothesis that spaced or distributed trial formats allowed for a neurological consolidation of the learned activity, resulting in improved performance. Additionally, they emphasized the usefulness of using a distributed trial format. In this format, skills being taught are placed in a naturally occurring sequence that enables a student, with a reduced ability to generalize, to learn the relationship of skills to the context in which they are used.

In the ICS model there are three methods of organizing the objectives of individual students into a cohesive group activity. The curriculum during group instruction can be organized by (a) "Different Programs, Different Themes;" (b) "Different Programs, Same Theme;" and (c) "Same Program, Same Theme." Using the "Different Program, Different Themes" approach one can quickly take the one-to-one
teaching programs of individual students and deliver the instruction sequentially to these students in a group; however, it is the least cohesive as there is no central topic or theme to the activity. In the “Different Programs, Same Theme,” students’ individual skill clusters may be different; however, they are tied together by a common purpose or theme resulting in a relatively cohesive group activity. A group activity that might utilize this format is the “Good Morning” circle. In the “Same Program, Same Theme” approach, all of the students’ skills clusters are essentially the same with a common theme throughout the group. This is the most representative of the model used in most “regular education” classrooms.

Individualization is achieved in these approaches through changes in four variables. These variables are (a) modes, (b) steps, (c) objectives, and (d) materials. The communication modes for both the student’s receptive understanding of the teacher’s instruction and the student’s expressive output of the correct response must be considered and can be manipulated. Steps in a task analysis of an instructional program may be individualized to meet each student’s needs. The objectives addressed within group instruction can be for acquisition of a new skill or for maintenance of a skill previously acquired. Lastly, the materials used in the activity can be individualized to make the instruction accessible to all students within the group (Brown et al., 1980).

The ICS model is a systematic framework incorporating several “recommended practices” for group instruction for students with severe disabilities. First, this model includes training skills in context during age appropriate activities and routines that are functionally relevant to the skill use. It enhances generalization when skills are taught
with diverse, relevant stimuli in natural settings (Brown, Nietupski, & Hamre-Nietupski, 1976). Second, discrete skills are sequenced and taught using discrete trials in clusters of related behaviors as they might occur in natural settings. Third, stimuli are varied during acquisition to further facilitate generalization. Instruction occurs in a variety of classroom activities, in different classroom locations, and across a variety of trainers. Fourth, the discrete trials on skills are distributed across the teaching sessions and are not presented in immediate succession (Brown et al., 1980; Mulligan et al., 1980).

Brown and Holvoet (1982) also identified environmental conditions and elements of peer interaction that resulted in observational or incidental learning from discrete trials conducted with one of the students in their study who had severe disabilities. Group instruction sessions allow for students to be actively involved in presenting stimuli and consequences to each other. Brown et al. (1980) state that group training can be organized to require attending to other students in order to give the correct responses resulting in more efficient learning.

A study conducted with two adolescents with severe disabilities by Brown and Holvoet (1982) explored the incidental learning during a group teaching session. Incidental learning is based on a student’s observation of group members during their instructional sessions. A student is considered to have learned incidentally if he/she can demonstrate knowledge about some aspect of a task that was not explicitly taught to him but was presented to one or more other group members. This research compared incidental learning employing structured student interaction with incidental learning in a group without formally structured student interaction. Incidental learning of each other’s
skill sequence was analyzed based on the occurrence of peer interaction at specific points in the instructional sequence. The instruction was structured so that the students provided tangible reinforcement to each other.

The first question addressed in the study was whether the students would learn each other's tasks just by being physically present in the same dyad. This condition showed no evidence of any acquisition of the other's task. The second question addressed whether one student would learn the other student's task if a structured interaction was established between the two students and the third question asked at what part of the skill sequence would the interaction be most effective in producing incidental learning. A series of structured interaction conditions were established to probe after individual steps in the skill sequence or after the terminal objective. The results indicated that once incidental learning of a skill occurred, it was maintained even when the structured interaction condition was terminated. The data indicated that observation was increased following the structured interactions resulting in evidence of incidental learning occurring with a minimal amount of structured interaction for one of the students.

Summary

Group instruction has been demonstrated to be an important instructional format for students who have severe disabilities. This research demonstrates the importance of training skills in context during age appropriate activities and sequencing discrete skills in clusters of related behaviors in routines that are functionally relevant to the skill use. These strategies allow the student with a reduced ability to generalize to learn the relationship of skills to the context in which they are used. The use of the ICS model
provides a framework for individualizing group instruction to meet each student's unique needs. The ICS model individualizes four variables for each student: (a) communication mode, (b) skill step, (c) objective, and (d) materials. Additionally, group instruction provides an increase in motivational variables and in opportunities to instruct and/or facilitate observational learning, peer social interaction, and communication.

*Group Instruction for Students with ASD*

*Special Education Settings*

Koegel and Rincover (1974) published seminal research on the feasibility of teaching students with ASD in a classroom setting using ABA procedures, including DTT. This research was conducted in a mock classroom on a university campus. The eight students ranged in age from 7 to 13. These students were living at home and not enrolled in school as they had been denied admission or had been exited from public school settings. The general academic curriculum used with all of the students consisted of kindergarten and first grade material.

The first experiment found that basic skills required for learning in a classroom setting, such as (a) attending to the teacher, (b) imitation, and (c) responding to the immediate environment, could be taught in a one to one instructional setting. However, generalization of the skills did not occur over the next six-month period when students were placed in a group instructional arrangement in the classroom. Although the classroom included the same teacher who had provided the one to one instruction, the rate of appropriate responding decreased even when the group size was only two
students. Additionally, there was no evidence of acquisition of new learning by any of
the students when instruction was provided in the group setting.

The second experiment was designed to address the results of the first study.
Behavioral procedures consisting of thinning the schedule of reinforcement for
appropriate responding and gradually increasing the group size were implemented with
the same students. Using these procedures, the students generalized the skills taught in
one to one instruction to the larger group setting. Large increases in appropriate verbal
and nonverbal behaviors occurred in seven of the eight students using these procedures.
Also, there was evidence that the students were learning new academic skills in the
classroom using a DTT group instruction format.

Subsequent investigations suggest that a variety of instructional arrangements,
including small groups of three to four students and peer tutoring are effective
instructional formats for the students with ASD in classroom settings. Kamps, Walker,
Locke, Delquadri, and Hall (1990) compared one to one and group instruction using DTT
procedures on acquisition of new skills and occurrence of off task behaviors with three
students with ASD in a fully self-contained public school classroom. The teacher, the
teacher’s aide, and typically developing peers, who had received training, conducted the
one to one trials. The teacher or the teacher’s aide conducted the group trials.

Student results were mixed based on condition, but generally the one to one
adult–student format, as well as the teacher led small group format were the most
effective. Peers were successful in teaching students with ASD to read sight words; but,
the acquisition rates were somewhat slower and there was more off task behavior
exhibited by their students. In contrast to the earlier research of Koegel and Rincover in 1974, the students did not require any non-group programming in order to facilitate effective group instruction. Also, it was not necessary for the teacher to gradually shape the teacher/student ratios and she was able to instruct all students in the same word recognition tasks using collective or choral responding on many trials. The use of a group format by the classroom teacher using collective trials (same stimuli and responses required by all students) provided for more total trials and verbal reinforcement than when students were taught in a one to one situation.

There was a considerable difference in results when the teacher's aide taught in a group format. The aide did not demonstrate the same degree of instructional and behavioral control as the teacher when conducting the group. During group instruction led by the aide, student acquisition rates were lower and on-task behavior was poorer with self-stimulatory behaviors occurring at a high rate. These results indicated the need to further analyze the behavior management procedures required and the level of training necessary to facilitate effective group instruction with students with ASD.

Further studies were conducted by Kamps, Walker, Maher, and Rotholz (1992) in twelve different classrooms involving a total of 46 students with ASD and other developmental delays, ranging in age from 5 to 21 years. These studies found that the students maintained previous levels of learning and behavior when instructed in a group format. Also, modest improvements in acquisition were noted when students were transitioned to small groups from exclusively one to one instructional formats. When classroom consultants, teachers trained by the researchers, provided further instruction on
the use of DTT procedures in the group context to the classroom teachers, there were additional increases in student acquisition rates. Consumer satisfaction ratings completed by the teachers providing consultation and those receiving it indicated that the students had benefited academically from the group instruction.

A recent study (Taubman et al., 2001) was conducted in a special education preschool with two students with ASD and six with other developmental disabilities. The classroom staff consisted of one teacher and two instructional aides. The group instructional approach used in this study incorporated many components of the ICS model, previously discussed in the literature on students with severe disabilities, and DTT. The formats used for discrete trials were (a) sequential; (b) choral; or (c) overlapping, the opening of a trial for a student before the closing of a trial already initiated for other students. The teacher flexibly selected the DTT formats for the trials, individualized trials for the students, made within session adjustments, and provided guidance and coordination for the instructional assistants during the group instruction sessions (Taubman et al., 2001).

This study examined the acquisition of three different types of new tasks. Acquisition of an imitation task, a pre-mathematics task, and a language task were examined for all of the students. Targeted skills were individualized during the group instruction for each student. Emphasis was placed on providing abundant, compelling differential reinforcement and developing functional alternative behaviors for disruptive or interfering ones. The results indicated that this instructional format was effective in
teaching preschoolers with ASD and other developmental disabilities a range of new skills.

Observations from the study indicated that demand-provoked acting out was diminished as instruction was rotated across the entire group as opposed to being concentrated on one student. The naturalistic aspects of this type of group instruction may facilitate the generalizability of instruction to inclusion settings. These researchers noted that this instructional format is complicated involving the integration of the embedding process, individualization of targets, and within session, across trials adjustments, along with precise interactions between teacher and teacher's aides. The need for further replication of this group instructional model and the need to develop curriculum to train teachers in this model is suggested by Taubman and his colleagues (2001).

*General Education Settings*

Six of the reviewed studies were conducted in general education settings where students with ASD were mainstreamed or fully included. Students' academic gains varied within and between these studies. Students with ASD participating in these studies were quite heterogeneous. However, the studies did provide strong evidence for improvements in social awareness and social functioning for all students in all of these studies. Group instruction methods using (a) class wide peer tutoring, (b) cooperative learning groups, (c) obsession theme games, and (d) structured peer buddy interactions were investigated.
Classwide peer tutoring. The 1994 study conducted by Kamps, Barbetta, Leonard, and Delquadri examined the impact of a class wide peer tutoring (CWPT) program on reading skills and social interactions. Three students with ASD were fully included in general education classes. These 8 or 9 year-old students were working at or near their assigned grade level in most academic curriculum. The CWPT program included alternating tutor-learner roles in assigned dyads with a typical peer, verbal and written practice of skills, praise and awarding of points for correct responses, and announcing winning teams. All of the students in the classrooms received three 45-min sessions on the CWPT procedures. The CWPT occurred for 25 to 30 minutes on three to four days a week as a supplement to other teacher directed reading instruction. A 15 to 20 minute block of unstructured free time followed the CWPT. The teacher had three to five areas set up with activities selected to promote social interactions (e.g., games, art projects, pantomime activities). All students were required to join a group during the unstructured free time period.

Results of this study indicated that all three students with ASD showed increases in words read per minute and correct responses to reading comprehension questions. Additionally, the duration of social interactions maintained by the students with ASD increased when the CWPT procedures were conducted. Two of theses students reported that they liked being tutored by their peers. Additionally, the classroom teachers reported that CWPT was easily implemented and that all of their students had benefited academically and socially from the program.
Cooperative learning groups. Kamps, Leonard, Potucek, and Garrison-Harrell (1995) conducted two research studies on the effects of cooperative learning groups (CLGs) with three students with ASD in general education classroom settings. The students ranged in age from 8 to 13 years. The cooperative learning groups followed teacher led reading instruction and read-alouds by individual students. There were three activities used during the CLG periods: (a) peer tutoring on vocabulary words, (b) comprehension questions, and (c) academic games. The dependent measures in these studies included (a) content learned, (b) academic engagement, and (c) target and peer interaction measures.

Pre- and post-tests assessed students' increases in the following areas: (a) reading comprehension, (b) vocabulary, and (c) sequencing. Measures of academic engagement included (a) active academic engagement; (b) appropriate passive engagement, such as attending or observing; and (c) other nonacademic behaviors like getting materials, transitioning or inappropriate off task behaviors. Interaction was recorded at least once weekly using a computer program that allowed the capture of frequency, length of interactions, and a total duration time for peer interactions during the instructional sessions. Interactions were coded when there was an initiation directed to a peer attempting to gain a response that was followed by reciprocal behaviors that occurred as a result of the initiation.

The four student CLGs were structured and monitored by the teacher and classroom aides. Students' group roles were assigned and rotated between the group members by the teacher. A token system was implemented by the classroom staff that
provided feedback to students on their use of appropriate social interaction skills and cooperation. In this token system, students were awarded stickers that were placed on a social skills chart that was posted in the classroom.

The studies indicated that the students had positive results regarding their ability to interact with peers and participate in groups effectively; however, their academic findings were mixed. One student was able to learn the vocabulary and reading comprehension from the same materials as peers, showing gains during the CLG intervention. The other two female students were highly frustrated by the novel used by the class during this study. Their academic performance data improved when they were given individualized reading materials but was still highly variable. The overall academic gains between pre- and post-tests indicated that they did not master adequate reading content during this intervention.

All three students significantly increased their peer interactions. One student only required the class wide reinforcement system to maintain appropriate behavior. The other two students also required individual monitoring and reinforcement charts similar to that used in their special education classroom.

Structured peer buddies. Laushey and Heflin (2000) conducted a study to compare increases in social skills of two students in their inclusion kindergarten classes. They compared increases in social skills using a peer proximity protocol versus teaching a social interaction procedure to their entire inclusion kindergarten class. Two male kindergarten students with ASD, aged 5 years 8 months and 5 years 6 months, were the subjects of this study.
The first phase was the implementation of a peer buddy system to increase peer proximity during free playtime. Students were assigned a daily buddy and the teacher displayed partners' names on a chart. Students were instructed to look at the chart and find their buddies prior to free playtime. They were instructed to pair with their buddies during free play with the teachers and paraprofessionals reminding the students of their roles during the free playtime.

The second phase of the study included teaching all students to (a) stay with, (b) play with, and (c) talk to a buddy. This intervention followed the method articulated by English, Goldstein, Kaczmarak, and Shafer (1996). A buddy training script was used to train the entire class in the procedures. The teacher used lecture with many examples and modeling to teach these social interaction procedures and tolerance of individual differences.

The four dependent variables evaluated in both phases were: (a) asking for an object and responding according to the answer given, (b) appropriately getting the attention of another, (c) waiting for a turn, and (d) looking at or in the direction of another person who is speaking to you.

During both of the phases, both students nearly doubled their occurrences of the targeted behaviors. Once all students were instructed in the stay, play, and talk procedure, the students with ASD demonstrated more occurrences of those behaviors. The students also evidenced increases in generalization across peers as they demonstrated more skill usage across a broader range of peers after the "stay, play, and talk," training was conducted.
Teachers reported that the procedure was easy to use and was helpful to all students in their classroom. Follow-up on one student the next school year indicated that he had maintained his level of performance of the targeted behaviors and had generalized them to his new environment without the use of the training procedure for the whole class.

*Obsession theme structured play.* Another study investigated incorporating the obsessive theme behavior of students with ASD in an age appropriate social game. Researchers sought to determine whether it would increase the students’ interactive play, generalize to other play, and result in increases in positive affect during interactions for the students and their playmates. Three students, ranging in age from 5 years 4 months to 8 years 9 months, in inclusive school placements were chosen for this study. The individual student’s obsessive themes were identified through interviews with their parents and teachers. The obsessive theme was then incorporated into a common playground game using the basic rules of the original game, adjusting for the age of the student, without limits on the number of students who could engage in the play simultaneously (Baker, Koegel, & Koegel, 1998).

The intervention included an adult prompting each target student as well as any group of typical peers who showed interest and approached the activity to play the modified game. All participation in the game was voluntary and participants varied from day to day. If peers were not in proximity initially, the adult prompted the student with ASD to recruit peers to play the game. This prompting occurred once or twice daily for the initial days of intervention, fading during the remaining several days of the
intervention, with no prompting of any type for the remainder of the study. Instruction on how to play was provided by the adult to all the children who indicated an interest in playing.

The dependent measures were (a) time engaged in social play in obsession and non-obsession theme games and (b) subjective ratings of student affect. A 6-point scale of affect was used for recording affective behaviors of two typical peers as well as that of the students with ASD during these probes. In the maintenance phase the adult who introduced the game was not present while several probes were recorded.

The data revealed that the percentage of time in which the students with ASD were engaged in appropriate social play interactions during recesses increased dramatically. Ratings of positive affect nearly doubled after intervention and were maintained at similar rates of typical peers. Following the intervention phase, the students continued to engage in both obsession and non-obsession games during recess, even in the absence of the adult who introduced the obsession games. The performance increases in social interaction and positive affect were maintained in a follow up that was conducted one and two months later.

Typical Preschool Settings

Two studies focused on preschoolers with ASD in typical preschool settings. These studies investigated training peer imitation and social interaction using time delay and priming interventions, respectively. Peers without disabilities provided appropriate modeling of target behaviors. The second study demonstrated the ability of preschoolers
without disabilities to engage in structured reinforcement of the appropriate behavior of peers with ASD with minimal training.

_Time Delay._ Venn et al. (1993) conducted a study in a typical preschool that included three students with disabilities, one of whom had ASD. They used a progressive time delay procedure with a small group during art center to increase the students with disabilities peer imitation. Only four students were allowed in the art center at a time, three students without disabilities and one student with a disability were grouped during experimental sessions. The students with disabilities were taught to imitate a wide range of novel behaviors that were within their physical capability when prompted by their teacher to “See what ______ is doing. You do it.”

In a time delay procedure there are two types of teaching exchanges between the student and the teacher. The initial procedure consists of 0-second trials where the teacher provides the student an opportunity to respond and immediately provides assistance that ensures the student responds correctly. Delay trials follow in a systematic progression from 2-seconds delay increasing in 2-second increments up to a delay of 8 seconds between instruction and assistance. There is a 15 to 60 second wait between teacher requests. There are four possible responses: (a) full imitation, (b) assisted imitation, (c) approximation, and (d) errors/no responses. Imitations, with or without assistance, resulted in specific praise and an edible for the student with ASD. Approximations of a behavior were given general praise (e.g., good try). If the student resisted the physical assistance no praise was given and the teacher continued to monitor the activity and assist any student within the group.
The preschooler with ASD in this study demonstrated variable performance when praise alone was used for full imitations. The researchers added an edible reinforcer and performance stabilized at a rate of at least 80% during the last 15 days of the study with 7 days at 100% full imitation. When probed, the student's cued generalization during fine motor group activities using the same instructional phrase occurred on 56.6% of the opportunities provided by the teacher in this new setting. Uncued generalization was not assessed.

Participation behaviors (engagement, waiting, and non-engagement, such as self-stimulation or off-task behavior) were also monitored using a 5-second time sampling during the 15-minute art center periods. Although student engagement behaviors decreased slightly during the time delay procedures, the student's appropriate waiting behavior increased. Researchers interpreted these data to be an indication that the procedure did not significantly interfere with the activity.

**Priming.** Zanolli, Daggett, and Adams (1996) conducted a study in a university preschool that served students with and without disabilities. These researchers used a priming strategy to increase the social interactions of two boys with ASD who were enrolled in this program. Priming consisted of three components: (a) the student was provided with the opportunity to use the same instructional materials prior to the activity, (b) only low-demand tasks that the student could easily complete were presented, and (c) sessions were rich in reinforcement.

The intent of the priming procedure was to increase both the frequency, variety, and quality of spontaneous initiations used by the two boys with ASD during whole class
play sessions with their peers. During free play sessions there were seven or eight students in an activity center (e.g., blocks, coloring, water table, etc.). Prior to free play sessions, the teacher directed a priming session with one preschool peer who did not have disabilities and one student with ASD. Prior to implementation of the priming intervention, a number of peers in the program received simple training on giving tangible reinforcers and responding to initiations using phrases like “Way to go,” “Hi five,” or saying “Hi, ______.”

The teacher used verbal instruction and prompting to direct the student with ASD to engage in a variety of social behaviors in a random order with the peer during priming sessions. The teacher provided a redirection to his responses that were directed to her rather than the peer. The peer provided the reinforcing consequences for all responses directed to him/her during these sessions. During the subsequent whole-class free-play sessions, the teacher only prompted the typical peers to respond within one second to initiations by the students with ASD. Typical peers were verbally praised for responding to the initiations of their peers with ASD. The students with ASD received no instruction or prompting.

Social reliability data for rate and nature of social initiations was obtained through observations of the typical peers during free play sessions prior to the experimental conditions. The use of priming was successful in increasing the number of spontaneous initiations. In fact, the students with ASD exceeded their typical peers in number of initiations during five-minute periods. Additionally, the typical peers became proficient in responding to the initiations of the students with ASD.
Comprehensive Group Developmental Model Programs

Several studies reported significant developmental gains in preschoolers with ASD who were enrolled in two developmentally appropriate model intervention programs. These programs used predominantly small and large group instruction (Hoyson, Jamieson, & Strain, 1984; Rogers, Herbison, Lewis, Pantone, & Reis, 1986; Rogers & Lewis, 1989; Strain & Cordisco, 1994; Strain, Kohler, & Goldstein, 1996). These studies were conducted in two programs: The Learning Experiences: An Alternative Program for Preschoolers and Parents (LEAP) and The Playschool. A description of these programs and the results reported follows.

LEAP. The LEAP preschool model reported significant developmental gains in all areas and the achievement of normal developmental rates during the intervention period. Long-term follow-up on students attending this program have indicated significant reductions in autistic characteristics and 50% of the students were transitioned to regular public school classes. The study did not report on the level of supports, specific placements, or functioning level of the students in general education classes (Strain, Kohler, & Goldstein, 1996). The studies did not specifically investigate the issues of generalization or incidental learning.

The LEAP model integrates students with ASD and students without disabilities in a preschool setting. Their program is based on a developmental curriculum using teaching techniques grounded in ABA. There are six demonstration classes with 16 students each; ten peers without disabilities and six with ASD are placed in each class. The staff ratio is two teachers and one aide to 16 students. The students with ASD
receive services from a full time speech and language pathologist within the classroom and at home. The LEAP model also includes a parent-training component to encourage continuity of intervention strategies across school, home, and community.

The LEAP program uses an individualized group instruction model that replicates the ICS model previously described. Instruction for the students with ASD is determined through a comprehensive developmental assessment leading to individualized goals and objectives for skill areas that are developmentally delayed or where performance deficits are observed. The curriculum developed from this assessment information is delivered in teacher-directed, individualized group instruction and in peer mediated/adult facilitated formats. As in the ICS model, their model individualizes for each student by manipulating the four variables of mode, steps, objectives, and materials (Hoyson, Jamieson, Strain, & Smith, 1998).

Additionally, all students are provided daily opportunities to play together. Social interaction and communication skills are frequently taught by using the students without disabilities as intervention agents with adults as facilitators. These peers are taught to use six facilitative strategies using direct instruction, verbal rehearsal, and guided practice. The strategies taught to peers are: (a) rewarding eye-contact; (b) describing their play or other students’ play; (c) initiating joint play; (d) repeating, expanding, or requesting clarification of utterances made by the student with ASD; (e) establishing joint attention; and (f) prompting requests (Strain et al., 1996; Strain & Cordisco, 1994).

The Playschool. Research conducted by Rogers and her colleagues in a center based program at the University of Colorado Health Sciences Center in Denver called
The Playschool also demonstrated substantial developmental gains in students with ASD. All students in the program had a diagnosis of either ASD or severe emotional/behavioral impairment. Staff ratios were one adult to two students. The intervention model was developmentally based and used play as a medium for all activities and therapies targeting impairments in symbolic thought, language and communication, impulse control, and social skills with adults and peers. Learning tasks in the areas of cognitive, communication, and social/emotional skills were presented through a variety of play modalities. Symbolic and interactive play was highly stressed as the vehicle for instruction.

The instructional role of the adults in the setting appeared to be less directive and more facilitative than reported in the LEAP model. However, the exact instructional methods were not specified. There was no mention of an individually developed curriculum used within the context of the group activities. There was an emphasis on creating strong positive affect during learning activities and on bringing the students into close proximity to each other and requiring them to interact in order to meet their own personal goals with adult facilitation. All students received individual speech and language therapy. Students attended the 3 to 4-1/2 hour a day program for approximately 18 months in all of the studies (Rogers, 1998; Rogers & DiLalla, 1991; Rogers, Herbison et al., 1986; Rogers & Lewis, 1989).

Summary

Since the 1974 seminal research on group instruction for children with ASD conducted by Koegel and Rincover, there have been numerous studies demonstrating the
efficacy of group instruction for these students in special and general education settings using ABA procedures. Students with ASD have acquired new skills and maintained appropriate behaviors during group instruction in both settings. These results were not dependent upon a single procedure, but were the result of the integrated use of a range of ABA procedures.

Comprehensive, developmentally appropriate programs using ABA procedures have been successful in reducing aberrant behaviors and in significantly increasing skills across domains. Although acquisition of academic skills varies within and between students with ASD, improvements in social awareness and social functioning have been consistently documented using group instruction strategies. The research indicates that the unique learner characteristics of a student with ASD and the specific skills to be taught should guide the selection of procedures and accommodations to be used for successful skill acquisition and generalization.

Summary

The public schools provide comprehensive intervention programs for students with ASD. The results of this review of the literature demonstrated a variety of group instruction methods that were effective in teaching these students in general and special education settings. The effectiveness of some methods employed in the studies varied, partially it seems as a result of the heterogeneity of the population included. This highlights the need to adapt instructional procedures to the specific characteristics of the individual student with ASD.
The related literature from studies involving students with severe disabilities documented ABA principles and DTT as effective instructional strategies to use with groups of students with reduced ability to generalize. It provided a comprehensive model of individualized group instruction that had been successful in developing new skills and incidentally acquiring skills through structured peer interaction. This model provides an organizational structure that allows teachers to implement the strategies effectively within a classroom. A similar organizational structure for group instruction, also utilizing ABA/DTT procedures, was used in the study conducted by Taubman et al. (2001) demonstrating its effectiveness in a preschool setting serving students with ASD and other developmental disabilities. Additionally, one of the comprehensive developmental preschool programs (LEAP) reported using a very similar model of individualized group instruction with significant success. These results provide support for the use of the ICS model and ABA procedures, including discrete trial, during group instruction for students with ASD in preschool classrooms.

A number of the studies with students with ASD incorporated the use of ABA principles and DTT as instructional strategies. DTT was implemented effectively within group instruction in numerous studies without prior one to one training of the students. In fact, Kamps et al. (1992) demonstrated modest gains in acquisition in group versus one to one instruction. Furthermore, the students maintained previous levels of learning and behavior when placed in groups for instruction. Although generalization and incidental learning with group instruction was assessed in studies involving students with severe disabilities, these studies did not specifically address either. The degree to which
students with ASD learn observationally during group instruction and the conditions that enhance it need further exploration.

The rates of student learning and on-task behavior during group instruction seemed to be a factor of the competence of the staff providing the instruction. Several studies demonstrated that staff knowledge of the principles of ABA were an important factor in the successful implementation of group DTT. These studies indicated that teacher mentoring on the use of these methods during the studies was related to further improvements in student acquisition rates. Studies reviewed, however, did not indicate the specific level of teacher knowledge required for increases in student acquisition rates.

The two documented comprehensive developmental model intervention programs for preschool students with ASD included group instruction at the onset of the students' enrollment. Neither of these programs was in a public school; however, one did have a majority of typical peers as participants. It is interesting to note that although the degree of teacher directed instruction did not seem equivalent, both programs reported significant reductions in autistic characteristics and substantial improvements in adaptive skills. Common elements in the programs were (a) the systematic use of peers as mediators for social instruction and (b) use of a developmentally appropriate curriculum.

Many of the studies conducted in general education settings incorporated peers without disabilities in the structured interventions. It is important to note that the special education studies demonstrated that simply providing proximity to peers without disabilities did not produce improvements in behavior or social skills. A variety of peer tutoring approaches were investigated. Several studies demonstrated that training
programs conducted with peers without disabilities and the students with ASD were instrumental in producing significant improvements in social interaction patterns. These increases in social interactions were maintained and in some cases generalized to new environments. In addition to peer training, adult facilitation of group activities was usually incorporated into the interventions.

A CLG, employed in many general education classrooms, was also an effective instructional format for one student with ASD. There was a need, however, to provide additional structure and accommodations for some of the students when this format was employed. Also, not all of the students demonstrated adequate rates of acquisition of new skills when instructed in this format. Further investigation may reveal if additional accommodations and behavioral supports would produce positive gains for a wider range of students with ASD. It may also prove beneficial to explore the specific learner characteristics that are necessary for students with ASD to be able to benefit from this instructional format.

The degree to which findings from this research can be combined to develop comprehensive programs for implementation in public schools has exciting possibilities. The use of social interaction within a structured but individualized group instruction format is promising as a tool to provide the kind of multi-faceted instruction that may encourage development of incidental learning skills and enhancements in generalization. An increase in these skills would enable students with ASD to access learning that is consistently accessed by peers without disabilities.
Group instruction, designed and delivered in accordance with the principles of ABA, is an effective instructional strategy for students with ASD. Special education teachers of students with ASD may realize an increase in efficiency by providing systematic, individualized group instruction while promoting improvements in social interaction, observational learning, and peer communication skills in their students.

Professional development for special education teachers would help them to bridge the gap between research and practice. As new special educators enter the field and teachers without the necessary competencies are assigned to positions serving students with ASD, the need for effective, replicable professional development grows. The literature clearly demonstrates the efficacy of ABA based group instruction for students with ASD (Kamps et al., 1992; Strain et al., 1996; Taubman et al., 2001), but it is not known whether current efforts to prepare special educators to use ABA techniques has resulted in teachers’ group instruction practices conforming to an empirically-based ABA group instruction model.

The attitudes and beliefs of special educators regarding the use of group instruction with students with ASD are not documented in the literature. Additionally, teacher’s perceptions of their abilities and skills to deliver effective group instruction are also not documented. As teachers’ existing attitudes, beliefs, and prior knowledge are platforms for internalizing new knowledge, it is important that research be conducted and results analyzed to determine a need for and a base of information applicable to designing an appropriate professional development curriculum.
CHAPTER III

Methods

This study utilized a multiple case study design (Bromley, 1986) to investigate the professional development needs of special education teachers who provide group instruction for students with ASD. The case study design was selected as the methodological framework because it is well-suited to provide adequate definition, description, and analysis of the essential features of teachers' current practices, knowledge, attitudes, and beliefs regarding group instruction for children with ASD. Support for the appropriateness of this method was derived from Yin (1984) who defined the case study as:

"an empirical inquiry that:

- investigates a contemporary phenomenon within its real-life context; when

- the boundaries between phenomenon and context are not clearly evident; and

in which

- multiple sources of evidence are used" (p. 23).

As teachers have different experiences, they may have different sorts of information, as well as different attitudes and values about what is important and relevant. These differences may give rise to different perspectives regarding the important features of the context and topic under study (Bromley, 1986). Evidence from multiple cases increased the robustness of this study.
This study served as a “needs assessment” which has also been referred to as a “front-end analysis” (Pajak & Tillman, 2001; Schnackenberg, Luik, Nisan, & Servant, 2001). Needs assessment helps curriculum planning, diagnose individual problems, assess student learning, demonstrate accountability, improve practice and safety, or offer individual feedback and educational intervention” (Grant, 2002, p. 157). Lockyer (2001) suggested that a careful needs assessment was integral to the process of developing any course or activity. It helps the educator ensure that time, learning, and administrative strategies are focused to meet the specific needs identified. Needs assessment provide the details, structure, and nature of an event or situation, enabling “well grounded, data-driven recommendations to facilitate and support both instructional and non-instructional interventions” (Schnackenberg et al., 2001, p. 140).

To provide adequate breadth to this study, the methods addressed the four classifications of needs (normative, felt, expressed, and comparative) developed by Bradshaw (as cited in Cowley, Bergen, Young, & Kavanagh, 2000). Needs defined by the standards established by experts are considered normative and were addressed through the literature review of current practice, the nominal group process, and the observation checklist (Skibbe, 1986). Those needs perceived by the participants themselves are felt and/or expressed needs and were addressed through the questionnaire, field notes during the observation, the drawing made during the observation, and the structured interview. Comparative needs, evaluation of one persons’ needs in relation to those expressed by others, were addressed through the cross-case analysis.
Nonnative needs are defined by more experienced members of the profession. These standards of “recommended practice” are based on the experiences and knowledge of these members and on what they have found to be important or relevant. The researchers contributing to the literature base on the topic are generally considered as experienced members of the profession. The Department of Education, autism consultation teachers who have received extensive training and who are experienced in the delivery of specialized methods also provided expertise. For this research, “recommended practice” and normative needs were identified through the literature review and the nominal group process conducted with the autism consultation teachers. The information derived from these sources contributed to the development of the observation checklist and the interview questionnaire.

The felt or expressed needs of special education teachers of students with ASD were of importance to this research. If changes in practice are to be realized as a result of professional development activities, then teachers’ beliefs and attitudes must be understood and addressed in the training (Lieberman, 1995). Understanding the teachers’ feelings toward and perceived difficulties with group instruction for students with ASD was a critical component of this research. Information regarding the teachers’ felt or expressed needs was collected via the field notes and the site drawing made during the observation, as well as the questionnaire and the structured interview.

Comparative need was significant to the proposed research as its stated purpose was to identify professional development needs of special education teachers of students with ASD. Cross-case analysis provides a comparison of individual cases leading “to the
potential for theoretical replications, through which analytical generalizations (rather than statistical generalizations) can be made" (Cowley et al., 2000, p. 129). Comparing the collected data and analysis from each case for similarities and differences provided insight into recurrent processes and patterns across cases. Thus, this provided the opportunity to build general explanations that fit all of the individual cases (Yin, 1984) that are relevant to the development of a professional development program.

Participants

There was a purposeful selection (Merriam, 1988) of five special education teachers as participants in this study. Teacher participants met the following criteria: a) were a licensed special education teacher assigned to a special education classroom on the island of Oahu, b) taught students that ranged in age between 3 to 8 years old, and c) had attended the Hawaii Department of Education (HDOE) intensive training in ABA and one-to-one DTT. This researcher contacted HDOE district autism consultation teachers on the island of Oahu and provided a brief overview of the study and the selection criteria for participants. Potential candidates were contacted and provided with an overview of the study. The first five teachers who acknowledged that they understood the nature of the study and agreed to participate were included. Informed consent procedures were conducted to ensure that the teacher participants understood the purpose and procedures that would be used in this study. (The agreement form is attached in Appendix A.)

Data Collection
To address issues of construct validity, this researcher followed the three principles of data collection presented by Yin (1984).

Principle 1: Use multiple sources of evidence. This provided multiple measures of the same phenomenon. It allowed the researcher to address a broader range of attitudinal and observational issues. Data collection resulted in both quantitative and qualitative information, allowing for the convergence of information from different sources.

Principle 2: Create a case study database. The database consisted of two separate collections: (a) the data or evidentiary base and (b) the report of this investigator. The data or evidentiary base was a collection of the primary resources assembled during the research. The data was organized and indexed to facilitate retrieval. The written case study was the second collection. The collections have been stored so that later retrieval of any and all parts is easily accomplished.

Principle 3: Maintain a chain of evidence. This allows for an external observer, the reader, to follow the derivation of any evidence from initial research questions to ultimate case study conclusions. During the data collection process, procedures were followed so that no evidence was lost due to carelessness or bias that would have resulted in lack of appropriate attention in considering the “facts” of the case.

The data collected were triangulated. This allowed for clarification and confirmation of the evidence, as well as making it possible to cross-check it (Lockyer, 2001; Merriam, 1988). Data collection procedures used in this study were: (a) literature review of current practice, (b) one observation of each participant, (c) video assessment,
(d) questionnaire, (e) one structured interview with each participant (Lockyer, 2001), and
(f) nominal group process (Skibbe, 1986) to inform the content of the checklist,
questionnaire, and the structured interview.

Bromley (1986) states a need to get as close to the subject of interest in a case
study through direct observation in the natural setting and through accessing the
subjective factors (e.g., thoughts, feelings, and desires). He posits that case studies cast a
wide net for evidence avoiding a “failure to realize what is really happening” (p. 23).
Data collection in this study was conducted so that it remained reliable and relevant;
however, sufficiently broad to allow the researcher to form “ecologically valid” (p. 23)
conclusions.

**Structured interviews.** Yin (1984) suggests that interviews are an essential source
of evidence in a case study. The interviewees’ verbal reports provided important insight
into and interpretation of the situation under study. Insight into the participants’ view of
their situation and their perceived needs can be gained through the interview process. In
addition, many components of instruction, such as planning and expectations, are not
visible during instruction and information can only be acquired from the participants
themselves.

This researcher contacted each participant to arrange a date, time, and place for an
interview. To provide structure to and consistency between the interviews, a
questionnaire with “preestablished questions” (as cited in Crandall, 1998, p. 157) was
used to guide the interview and focus the data collection. (A copy of the interview
questions and protocol is provided in Appendix B.) The researcher read each question
providing the interviewee the opportunity to ask questions and make additional comments regarding each item. Through the structured interviews, the researcher gathered information relative to the teachers' beliefs and attitudes, organizational constraints, demographics, and their perspective on their professional development needs regarding group instruction for students with ASD. The researcher provided opportunity for the participants to expand on their answers and clarify responses throughout the course of the interview.

Demographic data were collected on the questionnaire for each participant covering three areas (a) personal identification, (b) teaching experiences, and (c) previous ASD related professional development attended. Personal identification data included: (a) gender, (b) age (several participants declined to provide their age to this researcher), (c) ethnicity, and (d) preservice education history (degrees and amount of coursework that was ASD specific). Teaching experiences data included: (a) number of total years teaching, (b) number of years teaching special education, (c) number of years teaching students with ASD, (d) current teaching assignment details (number and educational arrangements of students), and (e) previous teaching assignments. Previous professional development included the following specifics for all prior ASD related training: (a) instructor, (b) number of contact hours for the training, (c) dates of training, and (d) content covered.

To aid in the development of the remainder of the questionnaire, the researcher used the nominal group process. This is a structured small-group technique that permits exploration of a question in a relatively brief time period of 45 minutes to 1-1/2 hours
The group was composed of five autism consultation teachers employed on the island of Oahu. The nominal group process had several steps.

In the first step, group members were asked to independently generate as many responses as they could to the following question: What are the difficulties experienced and contextual problems associated with special education teachers' use of an ABA-based group instruction strategy for students with ASD? After a period of individual reflection and writing, the next step was to develop a list of all ideas generated by the individual members. A round-robin strategy was used, allowing each individual to add one item to the list in a sequential manner, until all ideas were listed. During this phase, ideas were only listed and no discussion was allowed. The next phase was a discussion designed to clarify the ideas on the list. The goal of the discussion was to clarify and provide brief pros and cons of the items that have been listed, ending with a priority ranking of items by group members. To rank the items, participants were asked to write down what they considered to be the top five most important items from the list.

Observations. This researcher contacted each participant and arranged a date and time for the observation. During the observation, a classroom drawing was made by this researcher to gather evidence regarding the physical constraints and climate of the setting (Yin, 1984). For each case, the researcher observed and videotaped (Bromley, 1986) 15 minutes of teacher led, group instruction in their classroom. The observation encompassed the teacher's behavior, the involvement and responsiveness of others (e.g., students and staff), the curriculum, and materials used within the context (Weade & Evertson, 1991). The parents/guardians of all students in these classrooms were
provided with a student video release form that explained the purpose of this study and videotaping procedures. This form provided the parents the option to grant or not grant permission for their child to be videotaped during the group instruction. Only those children whose parents gave consent were videotaped. (Refer to Appendix C for a copy of the video release form.) This allowed for a direct observation of the performance of each participant as it normally occurs (Kazdin, 1982). The teachers’ ability to employ an empirically-based ABA group instruction model (dependent variable) after having been instructed in ABA techniques and one-to-one DTT (independent variable) was the focus of the videotape analysis. This provided an objective description of teachers’ performance relative to the component parts of an empirically-based ABA group instruction model.

An observational protocol (Yin, 1984) was developed to guide data collection. The protocol included (a) a checklist, (b) a drawing of the classroom during group instruction, and (c) the researcher’s notes. (Refer to Appendix D for a sample of the observation checklist.) To address issues of construct validity, the following steps were taken to develop an operational set of measures for the observation. The items included in the checklist were based on recommended practice identified in the literature. To improve the comprehensiveness and relevance of the checklist, several autism consultation teachers who were experienced in ABA-based group instruction reviewed it.

The checklist was used to standardize the analysis of the videotapes. The analysis was designed to capture data relative to the actual performance of the participants during group instruction. The checklist included items on the instructional components of ABA-
based group instruction. This included items related to (a) instructions/cues, (b) prompting, and (c) feedback, (d) trial format (sequential, choral, or overlapping). It also captured elements of the ICS model related to curriculum, such as (a) individualization across the variables of mode, objectives, steps, and materials; and (b) use of age appropriate activities.

Videotaping the group instruction segments provided a visual and auditory record of the events, freeing this researcher to make field notes during the observation. It also enabled the researcher to review the session for further analysis at a later time and to improve internal validity by conducting inter-observer reliability checks. During the viewing of the videotapes, an interval recording method was used. Each item on the checklist was scored for each interval as observed at a level deemed competent (+) or not observed at a satisfactory level of competence (-). Intervals where the item was not observed at all were scored (0). Results were graphed and a visual inspection of the data was conducted.

For purposes of reliability and to circumvent bias, the videotapes were viewed and the checklist scored by another observer in addition to the researcher. A point-by-point agreement ratio was used to assess the reliability of scoring of the videotapes by the two observers. Using this method provided a comparison of each item during each scoring interval. An agreement was counted when both the researcher and the other observer scored an item on the checklist the same. The percentage of inter-observer agreement was calculated by dividing the number of agreements by the number of
agreements plus disagreements and multiplying by 100% (Kazdin, 1982). The inter­observer agreement on the scoring of the videotapes ranged from 84% to 93%.

Summary. For each case, the structured interview was conducted first and then the observation was conducted. Conducting the interview first provided an opportunity to build rapport and discuss any concerns the participants had regarding the research. After the structured interview, this researcher discussed the details of the observation and the videotaping. Any remaining logistical issues regarding setup of the video equipment was evaluated and discussed with the participant. The participants were encouraged to express their concerns and needs regarding the videotaping. Data were collected concurrently across cases due to the necessity of the researcher to be flexible regarding the participants’ availability.

Data Analysis and Interpretation

This researcher reviewed all data and conducted a comprehensive analysis of the evidence gathered. Analysis of the data was ongoing throughout the data collection. The data collected in the structured interview and observation were analyzed quantitatively and qualitatively. Each individual case was analyzed separately, followed by a cumulative analysis of the five cases to determine patterns, as well as inconsistencies between cases.

Within-case analysis. This researcher conducted a gap or deficiency analysis (Grant, 2002) of the data collected on the observation checklist. The gap or deficiency analysis involved comparing performance with stated intended competencies. This analysis was conducted by a visual inspection of the observation checklist data completed
for each participant’s group instruction videotape. Information derived from the gap analysis, the questionnaire, classroom drawing, the structured interview, and researcher’s notes made during the observation were reviewed several times. Units of data that could stand alone and were heuristic from all of the above data sources was coded, sorted, and categorized. The data was analyzed for patterns (Merriam, 1988).

*Pattern-matching.* As this research was designed to identify professional development needs, the categories of need described earlier: (a) normative, (b) felt and/or expressed, and (c) comparative were part of the framework organizing the case study analysis. A pattern-matching and an explanation building strategy was employed to analyze the data (Yin, 1984). Pattern-matching compares the pattern of data collected to a predicted pattern. Data revealing differences between actual and “recommended practice,” whether they were identified as normative or as felt and/or expressed needs, could potentially be attributable to three causes. These “performance problems” (Pajak & Tillman, 1987, p. 263) were anticipated to be attributable to (a) a skill or knowledge deficiency, (b) an incentive or motivational deficiency, (c) an environmental constraint, or (d) combinations of the three. Using this model, it was possible to focus the proposed research on skill/knowledge deficiency patterns that can be included in professional development curriculum. At the same time, teaching takes place within a context and issues related to motivation or environmental constraints must be taken into consideration and addressed in the training activities.

Placing these variables on a three by two matrix (skill/knowledge, incentive/motivation, environmental constraint by normative or felt/expressed) provides
the framework for pattern matching for the proposed research. Data was placed on the matrix into the three categories by its’ origin as derived from a normative process or felt and/or expressed by the participants. It was possible that a single data point was placed in more than one grid of the matrix since differences were attributable to multiple sources. A sample of the matrix follows.

<table>
<thead>
<tr>
<th></th>
<th>Normative</th>
<th>Felt/expressed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill/Knowledge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Incentive/Motivation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Constraints</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Explanation building/Cross-case analysis.* Explanation building is an iterative process. It was used in this research as the cross-case analysis. This process began after the data from the first case had been categorized, examined, and patterns and themes developed. Theoretical statements or propositions regarding professional development needs reflected in the data were drafted. The details of the case were compared to the propositions and revisions of the propositions were made where indicated. Then, the second case was analyzed in the same manner and the findings were compared to the revised propositions from the first case. Again revisions to the propositions were made based on the additional information from the second case. Each case was analyzed individually followed by a comparison of the revised propositions to the facts of the third, fourth, and fifth case, respectively. Final conclusions were based on quantitative and qualitative information derived through analysis of the individual cases, as well as the cross-case comparison.
CHAPTER IV

Results

Individual Case Study Analysis

The findings from the data gathered in observations, structured interviews, video analysis, the research literature, and the nominal group process are presented within the following chapters. These findings provide insight into the experiences associated with special education teachers' use of an ABA based group instruction strategy for students with ASD. This chapter reviews each case study; the subsequent chapter is organized by the four questions addressed in this research.

The five autism consultation teachers from three school districts on Oahu participating in the nominal group process provided insight into the major factors impacting teachers' delivery of "recommended practice" group instruction. These teacher trainers articulated professional development needs that were subsequently echoed by the five classroom teacher participants. The individual profiles of the classroom teachers and their experiences with group instruction reveal points of convergence and divergence in their attitudes, practices, and beliefs. Individual case studies of the classroom teacher participants follow. Table 4.1 provides a descriptive summary of the classroom teacher participants.
Table 4.1.

*Description of Classroom Teacher Participants*

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Preschool</th>
<th>K to Grade 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>A</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>female</td>
<td>female</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Caucasian</td>
<td>Caucasian</td>
</tr>
<tr>
<td>Yrs. Teaching</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Yrs. Special Ed.</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Yrs. ASD</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Location</td>
<td>Suburb</td>
<td>Rural</td>
</tr>
<tr>
<td>Total Students</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Students with ASD</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>Degrees</td>
<td>M.Ed.</td>
<td>B.A.</td>
</tr>
<tr>
<td>Severe Specialization</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>ASD Training</td>
<td>5 days</td>
<td>7 days</td>
</tr>
<tr>
<td>Mentoring Rec’d.</td>
<td>4 mo.</td>
<td>3 days</td>
</tr>
</tbody>
</table>
Teacher A
A veteran teacher of 15 years with Masters degrees in Special Education and Administration and Supervision, Teacher A began a co-teaching assignment in a specialized preschool class for students with ASD and other communication delays in a suburban area just four months ago. Although she had no prior preschool teaching experience, she had taught special education for 10 years, including one year of teaching a few children with ASD in a fully self-contained special education classroom. Teacher A came to Hawaii two years ago under a special teaching contract that was established to fulfill the Felix Consent Decree requirement to increase the number of licensed special education teachers in classrooms throughout the state. She stated that she was licensed in her home state to teach "physical education, psychology, emotionally disturbed." The intensive weeklong ABA/DTT workshop she attended just prior to beginning her current assignment was "really my first formal education in autism." Teacher A stated that she was unfamiliar with the research literature on interventions for students with ASD.

Teacher A was one of two teachers assigned to this classroom at the beginning of the school year. The other teacher was a very experienced preschool teacher with formal education in child development and early childhood education, coupled with substantial training in ABA/DTT. Two full time educational assistants and two part time assistants were also assigned to this class. Teacher A shared that she uses a group instruction format for about 30 minutes daily, 15 minutes in a morning circle and 15 minutes in a circle prior to lunch. Throughout the observation, she portrayed the image of a technician carefully following a procedure, appearing somewhat uncomfortable and unsure of the next step.
The large classroom where she taught was arranged in traditional preschool centers. A housekeeping center, block and manipulative center, puzzle center, computer center, science center, art center, and free play area were clearly visible. There was an abundant supply of early learning materials and toys filling the shelving units that delineated each of the centers. The art center featured a large horseshoe shaped table that was also used for snack and lunch. A small table and chairs was prominently placed within most of the other centers, providing many individual teaching stations throughout the classroom. A large group area was delineated by carpet squares placed on the floor for the children to sit on. Baskets of teaching materials, a CD player and CDs, and a Helper's Chart on a stand were placed on the floor along the wall for the teacher's use during circle time.

Although the class may serve students between the ages of 2-1/2 years to 5 years old, the seven students currently assigned to the class were 3- or 4-year-olds. The four students observed in the class during group instruction were 3-year-olds and had been in school for less than one year. Three of the students came independently when called to circle time. An educational assistant brought the remaining student to the large group area, leading him by the hand. As the students took their seats with prompting from the classroom staff, three educational assistants and a second classroom teacher sat down on the floor behind the students. Teacher A sat on the floor about 2 feet in front of the children.

*Interview.* Teacher A revealed that her education and training regarding early childhood and ASD were very limited. Her 10 years of experience in special education
had not specifically prepared her for conducting ABA based group instruction with preschool students with ASD. When asked if she enjoyed conducting the group instruction sessions, she responded, "I enjoy doing it." Casting her eyes toward the floor and visibly stiffening in her chair, her voice tone and body language conveyed a different message. Her responses during the interview often seemed tentative, lacking conviction.

At the time of this interview, she was receiving mentoring from the other teacher in the classroom. Teacher A stated that she was basically following along with the schedule and activities that the other teacher had arranged. Not having reviewed the literature on ASD and group instruction, she was unfamiliar with the reasons for or the range of instructional strategies that could be used with these students during group instruction.

She did review the skill objectives that each child was working on each day, although, she did not engage in formal planning to incorporate those objectives into the activities conducted during group instruction. She stated that she was still trying to figure out how to select activities to use during group instruction. Comfortable with the ratio of classroom assistants and their knowledge and abilities, she felt that group instruction went well. "Most of the time we work really well on the group instruction. No specific difficulties." She did share that for her the two most difficult aspects of group instruction were the limited attention span of the students and their need for immediate gratification.

Teacher A was struggling to understand how group instruction actually benefited the students in her class.
"... at times I feel like it's almost a group of seven little individuals sitting in a group and we could do the same thing if we just spread them out across the room and we'd get the same results. But, it's something that I'm trying to work on to figure out what would be more effective."

Although she stated that group instruction was important for her students since they preferred to be alone, her specific rationales were related to how it benefited her rather than her students. She stated that group instruction was her opportunity to see what spontaneously occurred with her students when they were placed in close proximity and to observe their level of social awareness and interaction.

She indicated that she felt that she needed additional professional development opportunities. Although she was implementing data collection during some one to one instruction, she did not currently have any data collection during group instruction. This was an area that she was interested in strengthening. Other areas that she expressed an interest in were behavior management strategies, use of videotaping for assessment purposes, and meeting with other colleagues teaching the same population to review scenarios and exchange ideas on effective practices.

Observation. On the observation checklist, Teacher A met criteria on the elements of a discrete trial (instructions, prompting, feedback) during 64% of the intervals. The classroom assistants supporting group instruction met criteria on prompting only 60% of the opportunities. One of the assistants actually escalated the disruptive behavior of one student during the group instruction through his feedback to the child. Another assistant was exceptionally skillful in prompting and providing feedback appropriately. This
assistant discreetly attempted to provide some verbal cueing to the assistant who was escalating the child's behavior; however, her attempts were to no avail. Teacher A appeared uncomfortable and rather unsure of her interactions with the students. She did not attempt to prompt or provide instruction to any of the classroom staff during this observation.

Although the curriculum was age appropriate, it was only individualized for the children during 20% of the intervals. The instruction was facilitated around nine songs with associated motions. Following directions and other early developmental concepts were occasionally interspersed between songs. Another concern was the failure to incorporate any social interaction or social communication opportunities between or among the students during the entire group session. It was apparent that the children were familiar with the songs and activities, with all children attempting to participate at some level during 80% of the intervals.

**Case summary.** Although teacher A was a certified special education teacher with substantial experience in special education, she lacked training and/or experience in early childhood education and in the educational needs of students with ASD. She had acquired knowledge of activities to use during group instruction; however, she appeared ill at ease throughout the circle time. Also, although she had received mentoring from an experienced teacher, she had not yet acquired skill in delivering instruction using a discrete trial format with a group of students. This appeared to influence her ability to accurately appraise the skill of her support staff during group instruction, resulting in a lack of guidance or feedback to them regarding their interactions with the students.
There was a substantial divergence between her actual performance and the optimal performance standards that were included on the observation checklist. Even with the benefit of ongoing modeling, she had failed to perceive this gap and indicated a belief that "...we work really well on the group instruction."

Although Teacher A was aware of the characteristics of young students with ASD, she had not gained an understanding of how to target their major social and communication deficits during group instruction. Additionally, there was a lack of differentiation in the instruction to accommodate the children's different skills and abilities within the context of the activities. She indicated that the areas that were most difficult were maintaining the students' attention and engagement. Her beliefs that she would benefit from professional development opportunities on assessment, data collection, and behavior management suggest that she was aware that she needed to gain a better understanding of what to teach and how to work with these students more effectively.

**Teacher B**

This was Teacher B's fourth year of teaching. She completed a dual certification program, holding a Bachelors degree in general and special education; however, all of her teaching experience had been in special education programs for students with ASD. Her first teaching experience was in a private day treatment program for students with ASD. She shared, "...they had extreme behaviors." Since then, she has taught in a public elementary school in a specialized program for students with ASD and other communication delays in a suburban area. There are currently five students assigned to
the program ranging in grade level from kindergarten through grade 2. Four of the students were integrated into general education classes for varying amounts of time. There were two full time educational assistants and two part time assistants assigned to the class.

She stated that there were no courses in her college program that focused on autism. "They had overviews within some courses." She had, however, participated in a number of professional development activities related to ASD. In addition to the 5-day intensive ABA/DTT training, she had attended two 2-day seminars presented by Dr. Ron Leaf on understanding and teaching students with ASD, a 1-day workshop on writing social stories, and a 1-day workshop on improving social skills for students with ASD. Additionally, she had received in-class consultation from experienced autism consultants on a quarterly basis for two years. "It was very beneficial when they did come in and gave me tips on how to work with each student and with the groups. I really benefited from that."

The classroom was designed to provide areas for large and small group instruction similar to those found in general education lower elementary classrooms; however, there was also a portion of the classroom devoted to highly structured individual workstations. These workstations were separated by moveable partitions and shelving units filled with individual baskets where the teacher placed the students' work to be completed. There was also a large play area in one corner of the classroom surrounded on three sides by shelves housing a large assortment of manipulatives and toys. Along the same wall, also surrounded on three sides by shelves with books and other teaching materials, was a large
horseshoe shaped table where reading, math, and art group instruction was delivered. In the center of the classroom was a row of small tables where two students could sit, side by side, for instruction or for playing tabletop games.

A semicircle of chairs facing one wall delineated the seating space for students during circle time. Along the wall in this area were a variety of chart stands with a calendar, a pocket chart for a variety of academics, and an alphabet chart attached to the blackboard. The floor in front of the blackboard was cluttered with materials on shelves, including a compact disc player and compact discs, and large rubber storage bins making access to the blackboard difficult for Teacher B and her students during circle time.

Interview. Teacher B spoke passionately, conveying through her responses that she felt her mission was to prepare her students for accessing general education instruction to the maximum extent possible. She shared that she felt there were many advantages to teaching her students within a group context and that group instruction was used for approximately four of the six hours of each school day. When asked if she enjoyed conducting group instruction, she responded with enthusiasm,

"Yeah, I do, it's fun! It's really good because you have the models amongst the children so that the children that are lower level can see what they are supposed to be doing."

Elaborating on the importance of teaching students with ASD to learn within a group context, she said,
"...in general ed they are doing a lot of groups...it is working as a group and each one has a core, clusters of four (desks), versus the one desk now. So all of it is seeming to go toward group now."

Teacher B conveyed a deep understanding of the instructional needs of her students. She indicated that she had also done some reading on group instruction with students with ASD. She stated, "I've read several articles on the internet and that people pass through me that always say different techniques to use and what's good for group instruction." She was also familiar with some literature on group instruction for students with ASD. Clearly, she recognized the importance of creating the instructional opportunities for developing social and communication skills.

"...I am facilitating communication between the kids. And that doesn't happen very often for our children in regular life. . . . . So they are practicing that language so it can generalize to recess or to regular education. If they need materials they ask a peer, so we are doing a lot of those kinds of things and a lot of communication."

She felt that group instruction was the "best thing" for her students with ASD. To that end, she created routines where the children practiced their language and social interactions throughout the day. Additionally, she incorporated reverse mainstreaming opportunities in her classroom where her students could engage in structured play activities with peers from general education classrooms.

Teacher B spoke at length about the group skills (e.g., choral responding, observational learning skills) that are required by all students in general education.
Additionally, she shared her belief that she should actively instruct her students in these group skills to prepare them for successful integration opportunities. She used a group instruction format for all academic content areas as well as for circle time. She revealed that she spends about 30 minutes planning academic group lessons so that each child's individual objectives can be met within the instructional activity. As she is familiar with a wide range of activities that she routinely uses during circle time, she does not write a plan but follows a familiar routine. She stated that it is necessary to make adjustments in the activities based on the students' moods and behaviors at the time.

The number of classroom support staff was considered adequate although there was a need for ongoing training due to staff changes and the needs of students. Using the appropriate level of prompting was considered an area that was particularly difficult for her staff. She indicated that the related service professionals that served her students were very supportive of the use of group instruction and they helped to facilitate various group activities in her classroom.

She considered behavior management to be the most challenging facet of her job. The student's behaviors during unstructured times such as recess presented the most challenge. She also related that as the student's observational learning skills improved, they began modeling the inappropriate behaviors of others as well. Additionally, training classroom staff to appropriately prompt and provide feedback to the students during group instruction was another challenge because classroom staff changed each year.

Teacher B did not take any data during circle time although she did during one-to-one instruction and academic group instruction. She expressed a need to have more
training on assessment and data collection. Other professional development that she felt she would benefit from was to engage with colleagues working with similar children, to review scenarios and discuss recommended practice, observations of other master teachers, and having master teachers observe her and provide feedback.

**Observation.** On the observation checklist, Teacher B met criteria on the elements of a discrete trial (instructions, prompting, feedback) during 93% of the intervals. The classroom assistants supporting group instruction met criteria on prompting only 25% of the intervals. When the assistants provided feedback to the students during group instruction they did so appropriately 100% of the intervals. Teacher B handled the diversity of her students with ease. She had a composed enthusiasm that seemed a nice fit for the students in her classroom.

Teacher B used an age appropriate curriculum that she individualized for the children during 90% of the intervals. She incorporated a variety of activities that replicated many of those found in general education classes for kindergarten students. She incorporated many social interactions and communication opportunities between students during the group session. These social instructional opportunities were incorporated within five separate activities that occurred during 40% of the intervals. The students were totally engaged during the first seven observation periods. The final activity occurred across the last three intervals. Unfortunately, this one activity failed to maintain the attention and engagement of all of the students thereby failing to meet criteria.
Case summary. Teacher B demonstrated the reliable use of ABA/DTT strategies in her classroom. Her program was highly individualized, providing instruction that was targeted to match the student's specific developmental/academic needs. She differentiated her instruction so that each student could understand and participate in each activity. Her circle time incorporated many instructional elements and teacher expectations associated with group instruction in primary general education classrooms, such as choral responding and observational learning.

It appeared to this researcher that Teacher B had a good understanding of ASD and of her students' unique learning profiles. Although more opportunities for social communication and interaction could have been incorporated into the group instruction activities, she did incorporate a variety of these instructional opportunities into the circle time activities. She translated her knowledge of the primary social and communication deficits associated with ASD into teaching interactions that she incorporated into her instruction. She also structured opportunities for her students to practice these skills across the school day and settings with typically developing students.

She desired professional development to increase her knowledge of data Collection procedures; as well as, opportunities to engage with other master teachers to observe and share effective practice recommendations. Additionally, her assessment of the area that her staff would benefit from additional training coincided with the data from the observation checklist. She presented as an extremely competent teacher who was reflective and striving for improvement. Although she considered behavior management to be the most challenging facet of her work, she demonstrated effective use of ABA
principles in dealing with one student's challenging behaviors during the circle time observation.

*Teacher C*

Holding a Bachelors degree in social work and an alternative certification in special education from a local university, Teacher C has taught for 3 years in a special education preschool in a rural area of the county. For the past two years she has had two students with ASD assigned to her classroom. When asked to share about her college coursework that was related to ASD, she laughingly stated,

"There was none. I had a lot of child development and psychology but none that were specific to autism."

To gain more understanding of ASD, she participated in several professional development activities during the past year. In addition to the intensive 5-day ABA/DTT training, she attended a 1-day seminar conducted by Dr. Ron Leaf on understanding and teaching students with ASD and a 1-day district workshop on developing communication skills in students with ASD. She received two in-class consultations from an experienced ASD consultant and spent three days in the district's specialized preschool classroom for students with ASD and other communication delays under the guidance of a master teacher to enhance her knowledge and skills in teaching preschoolers with ASD.

There were six children assigned to her preschool program this year. Two full time educational assistants and two part time assistants were assigned to the class. Additionally, a skills trainer was contracted to come into the class during the morning for a total of 20 hours a week to provide assistance to one of the children with ASD. Teacher
C stated that large group instruction was conducted for approximately 60 minutes a day. A large group circle time was held twice daily, once in the morning and again at the end of the day. Also, a large group art activity followed morning circle about 3 days a week. In addition, the teacher frequently assembled the children into small groups of two or three for instruction throughout the day.

The classroom was arranged into several areas. There was a large group table that was used for snack, lunch, and art activities. A large square, enclosed free play area was created with shelving units that were filled with toys and manipulatives. A few small tables and chairs, placed in the center of the room, created several small group or individual teaching stations. A semicircle of block chairs facing a wall on which a large white board had been mounted formed the circle area. Along this wall was a name chart, books, and other teaching materials in crates, as well as, a small platform with two stairs that the children could use to access the board. A shelving unit separated this area from the entrance doorway on the right. A compact disc player, compact discs, and a variety of picture cards, and other materials filled these shelves.

Interview. Teacher C was confident in her knowledge of early childhood and developmentally appropriate practice. When asked if she enjoyed conducting group instruction, she responded in a relaxed manner, "Yeah, I do, I do! It's fun. We have a good time with the kids." Her tone was confident as she shared information about her program and what she was trying to accomplish with the students. She was attempting to integrate the student's individual goals and objectives into the preschool sequence of a mandated, school-wide curriculum program. She reported that the planning was "very
complicated" and that she needed more time to prepare than was available during the school day. She also expressed a desire to have the time to do more reading and studying to incorporate more new materials and activities into her program.

She expressed the belief that group instruction provided an opportunity to structure social interaction and communication opportunities between and among the students. She shared a few instructional strategies that she had developed that addressed this need. Overall she felt she had the most difficulty maintaining the students attention during group instruction and finding ways to provide reinforcement that did not disrupt the flow of teaching. She stated that she had enough assistants in the classroom and felt that although they were competent, they all needed additional training to be more effective. Her classroom assistants recorded anecdotal data throughout the day; although, they did not have a specific data collection system to capture information on student performance during group instruction.

Teacher C felt that she would benefit from additional professional development and preferred that it be in a mentoring format. She also expressed a desire to meet with colleagues teaching similar children to compare what worked and to gain more information that she could incorporate into her program. She also felt that she needed more time to dialogue with other professionals who provided services to her students beyond the school day.

*Observation.* On the observation checklist, Teacher C met criteria on the elements of a discrete trial (instructions, prompting, feedback) during 91% of the intervals. The classroom assistants supporting group instruction met criteria on prompting in only 20%
of the intervals. One of the assistants in this classroom also escalated the disruptive behavior of a student while providing feedback to her. Although there were three assistants, one skills trainer, and the speech pathologist providing support for the five students, the most glaring problem was a failure to prompt when necessary. The support staff provided feedback appropriately 10% of the observation intervals.

Teacher C appeared relaxed and enthusiastic during the group instruction. Although the curriculum was age appropriate, she failed to individualize the instruction or materials for the students. The same tasks were presented in the same manner to all. The instruction included the use of 9 songs with associated motions. Following directions and many other early developmental concepts were interspersed between songs. Social interaction and social communication opportunities between or among the students were only incorporated during 20% of the observation intervals. There were a substantial number of disruptive behaviors and all of the students were attending and engaged in only 40% of the observation intervals.

Case summary. Teacher C incorporated a wide variety of developmentally appropriate activities into her circle time instruction. She demonstrated efficient use of discrete trial; however, she lacked efficiency in distributing the trials across the students. This contributed to poor engagement and off-task behavior of several students in the group as there was often a lengthy wait between their interactions with the teacher. Additionally, there was minimal differentiation of instruction. The classroom support staff provided an inadequate level of prompting and their feedback to students following disruptive behavior actually escalated the behavior on several occasions. Teacher C did
maintain an appropriate level of enthusiasm and seemed relaxed even during a student's behavioral outburst. She was reflective and recognized that neither she nor her assistants had adequate command of ABA principles and instructional strategies to manage group instruction smoothly.

Her instruction did reflect an understanding of early childhood development and curriculum. She expressed an understanding of the importance of improving social communication and interaction of her students; however, she incorporated few specific instructional opportunities into the circle time. Periodic interactions with the students in a Head Start program on campus did not seem to incorporate any actual social or communication instruction either. She did express an interest in receiving mentoring, opportunities to dialogue with master teachers, and time to read and study to learn new activities that she could incorporate into her classroom.

Teacher D

Teacher D was a veteran early educator with 15 years of teaching experience at the preschool level. She had taught in two special education preschools in rural areas of the county during the past 5 years. She holds a Bachelors degree in physical education, a Masters degree in elementary education with an early childhood endorsement, and a recertification in special education through the State of Hawaii RISE program. The RISE program is an HDOE initiative to prepare general education teachers to teach in special education programs. Teacher D also completed a 3-year Montessori certification program. Before becoming a preschool teacher, she was a physical therapy specialist for babies from 6 months to 6 years old.
Teacher D stated that none of the coursework that she had taken had been specific to ASD. To gain knowledge related to ASD, she attended several professional development activities. In addition to the 5-day intensive ABA/DTT training, she attended a 1-day lecture by Dr. Ron Leaf regarding understanding and teaching students with ASD. She attended two different 1-day workshops on the Picture Exchange Communication System (PECS). She also spent one week in the district's specialized preschool classroom increasing her knowledge and skills under the guidance of the program's master teacher.

Although her special education classroom is attached administratively to a local elementary school, it is actually a small cottage building with a covered porch located on the grounds of a community preschool. There were five students assigned to the class, including one with ASD. There was one educational assistant assigned to the classroom. However, she often accompanied students to the larger preschool building for integration opportunities leaving Teacher D without any assistance for most of the day.

The classroom was small with only a few specific areas clearly identifiable. Shelving units covered the majority of two walls and contained a variety of teaching materials. There was a small table and chairs that could be used as a teaching station. There was a computer station, a free play area that included a variety of toys as well as a kitchen set, and an area with mats on the floor where the students sat for circle time activities. Centers had to be set up daily by the teacher within the classroom and on the covered porch.
Teacher D shared that she used group instruction for approximately 90 minutes a day. She brought the students together three times daily for group instruction, story time, morning circle and again at the end of the day. In the circle area, a calendar and a name chart were attached to the wall near the floor adjacent to the seating mats. There was a shelf with many teaching materials in zip lock bags and baskets, as well as a compact disc player and compact discs adjacent to this wall. Teacher D sat on the floor in front of these materials during circle time.

Interview. When asked if she enjoyed conducting group instruction in her classroom, animatedly, she answered, "Yeah, I love what I do!" Teacher D delighted in singing and doing movement activities with her students. Her enjoyment of her work was obvious throughout the interview. She was confident in her knowledge of child development and early education curriculum. She felt that social awareness and observational learning were extremely important for her students and that they were facilitated by the group activities. Although she did not plan each circle time, she planned activities to address the children's objectives monthly and incorporated those activities into the circle time. She reported spending a great deal of time writing her monthly instructional plan and organizing the required materials. She did include students without disabilities from the adjacent preschool in her group on a regular basis. She said that typically, the other teachers sent over students who they found somewhat difficult to manage in their larger groups, but that these students had been really good in her smaller group and provided appropriate modeling of desired behaviors.
Although she reported having an inadequate number of classroom assistants, she stated that she preferred having none during group instruction since she had not had positive experiences with assistants during group instruction in the past. She reported that it had been difficult to get assistants to prompt appropriately and that their verbal prompting was distracting and disruptive. She did report that it was difficult keeping her students with ASD engaged during some of the group activities without disrupting the flow of instruction for the rest of the group. The delivery of tangible reinforcement during group instruction was an area that she found difficult. She reported that it was better when the speech pathologist came during the group sessions and provided assistance. Taking data was reported as an area that she considered difficult and she did not take data during group instruction sessions.

She expressed an interest in gaining more knowledge about students with ASD. She felt that she was just doing what she did for any child and that she struggled in getting her student with ASD to look at her when she was giving instructions. She did feel that he had gained many skills and that maintaining high expectations was working in helping him become independent in many tasks. She expressed an interest in having a mentor observe and provide constructive feedback.

*Observation.* On the observation checklist, Teacher D met criteria on the elements of a discrete trial (instructions, prompting, feedback) during 50% of the intervals. Although an assistant was assigned to the class, she escorted one student into the inclusive environment on the campus and was not available during group instruction.
Although she had no assistance, Teacher D handled the group with relative ease and obvious enjoyment.

Although the curriculum was age appropriate, all activities were presented in the same manner using the same materials. The instruction was facilitated around seven songs with associated motions. Following directions and other early developmental concepts were interspersed between songs. She incorporated several highly interactive songs, e.g., London Bridge and Row, Row, Row, Your Boat, which provided several extended opportunities for social interaction. However, overall she only incorporated social interaction during 20% of the observation intervals. She failed to incorporate any social communication opportunities during her group instruction. It was apparent that the children were familiar with the songs and activities, with all students attempting to participate at some level during 60% of the intervals.

Case summary. Teacher D was enthusiastic and confident. Her instruction reflected a deep understanding of child development and early childhood curriculum. Her knowledge of the instructional needs and recommended strategies suggested to teach students with ASD; however, seemed incomplete. She taught the group with obvious enjoyment, even though she had no assistant to prompt her student who periodically failed to respond to her group instruction. There was little differentiation of instruction, as well as, minimal instructional opportunities for social communication or interaction. She did incorporate two activities that required sustained social interaction, e.g., London Bridge and Row, Row, Row Your Boat that all of the students seemed to enjoy immensely.
She was reflective and recognized that she would benefit from additional knowledge on instructional strategies that elicited improved responses from her student with ASD and on data collection to monitor their progress. She expressed the desire to have a mentor to assist her in gaining skills in working with students with ASD.

Teacher E

Teacher E held a Bachelors degree in Fine Arts. She had received a post-baccalaureate in special education and anticipated completing her Masters degree this semester. She had taught for three years, all of which were in special education in programs serving students with ASD. When asked if she had taken any college coursework that was ASD specific, she grinned as she stated, "In one course, it was an overview of special education and it had about two paragraphs about autism and that was about it."

She had availed herself of numerous ASD-specific professional development opportunities since she began her teaching career. In addition to the 5-day intensive ABA/DTT training, she attended two 2-day workshops by Dr. Ron Leaf on understanding and teaching students with ASD. Additionally, she attended a 2-day workshop on functional behavior assessment, two 2-day workshops on PECS, two 1-day workshops on improving the social skills of students with ASD, and a 1-day workshop by Dr. Robert Horner on teaching students with ASD. She also had received in-class consultation and training from experienced autism consultants three times in the last year.

Teacher E's current teaching assignment was a kindergarten through grade 2 special education classroom serving children with ASD and other communication delays.
in a suburban area. There were currently 4 students assigned to the class. All but one student was integrated for some portion of the day into a general education classroom. There were two full-time educational assistants assigned to the classroom and one part time assistant. In addition, there was a contracted skills trainer that came into the classroom for 3 hours a day.

Her classroom was spacious with numerous centers clearly defined, separated by shelving units displaying a variety of teaching materials. The centers included a listening center, a computer center, a reading area, a manipulative center, a game center, an academic center with a large horseshoe shaped table, and a circle area. Within most centers, a small table and chairs was placed creating numerous teaching stations across the classroom. The circle area was delineated by a row of chairs for the students facing the back window wall. There were several chairs placed behind the students' chairs for the educational assistants. Several chart stands, an easel, a compact disc player and compact discs, and a variety of miscellaneous teaching materials filled the shelves.

Interview. From her responses during her interview, Teacher E clearly saw her role as preparing her students for accessing general education learning opportunities. Speaking with confidence and intensity, she shared,

"I use group instruction for morning group. I do it at centers, often times I have two students. .... I do group instruction for gross motor activities outside and for games. I have another group time after lunch, like a story time, where I have a story and then we do an art activity based on the story."
She also shared that she conducted a reverse mainstreaming playgroup and that all but one student spent a portion of everyday in a general education class with an assistant. When asked if she enjoyed conducting group, her expression became very serious as she stated,

"Yes, I do. But, it's stressful though because you have to think of all their different levels. You have to be quick. You can't lose one. If you lose one and you help that child to come back, then the other children can be lost as well. You have to keep the momentum and the pace."

She seemed confident in the importance of conducting group instruction so that students could work on observational learning, turn taking and waiting, and learning from their peers. She did report planning daily for her group instruction and the importance of keeping in mind what their individual objectives were during the instruction.

The number of classroom staff was felt to be appropriate; however, she felt that they needed to have more formal training on how to support group instruction. She felt that it was difficult for her to provide adequate training in the course of the school day. She reported that her related service staff did not assist during group instruction and that all of their services were conducted separately with the students.

She felt she still needed to develop her knowledge and skills in assessment. Although she had taken regular data related to a behavior modification program for a student's disruptive behavior during group; she had not taken data on skill acquisition during group instruction. She expressed an interest in meeting with other teachers of
students with autism to learn more about the development of an IEP, specifically about goals and objectives.

**Observation.** On the observation checklist, Teacher E met criteria on the elements of a discrete trial (instructions, prompting, feedback) during 96% of the intervals. The classroom assistants supporting group instruction met criteria on prompting only 50% of the intervals. When prompting occurred it was done appropriately; however, the assistants failed to prompt when necessary during half of the observation intervals. The teacher appeared relaxed and enthusiastic during a highly individualized (90% of intervals) and varied group instruction session.

The curriculum was age appropriate and also incorporated many elements from the students' general education programs. Only two of the activities (20% of the intervals) incorporated social interaction or social communication opportunities between students. The students were engaged and participated during 90% of the intervals.

**Case summary.** Teacher E demonstrated understanding of the educational needs of students with ASD. Her group instruction was highly individualized and she competently used ABA/DTT strategies resulting in full student engagement during 90% of the observation. Her curriculum was closely tied in to the requirements and expectations of the students' general education teachers. She recognized the importance of improving her students' social communication and interactions and she structured reverse mainstreaming opportunities for her students with general education peers. However, she did miss many opportunities to incorporate instruction in her circle time...
that would have targeted social communication and peer interaction or observational learning.

She recognized the training needs of her classroom assistants. Additionally, she expressed an interest in professional development to strengthen her knowledge of assessment and data collection practices. Interest was expressed in professional development opportunities to meet with other teachers of similar students with ASD to exchange ideas regarding IEP development.

Cross-Case Analysis

After the individual case analyses, a cross-case analysis was conducted. The results of the pattern-matching and explanation building process are presented in this section. The data have been organized by the four research questions.

What are the Current Beliefs, Attitudes, Skills, and Practices of Special Education Teachers of Students with ASD in Regard to Group Instruction?

The special education teachers participating in this study shared openly about their teaching experiences and beliefs. They imparted a sense of deep commitment to the use of group instruction, although they expressed concerns about the difficulties they experienced while instructing their students with ASD within the context of a group. There were some contrasts between the teachers' expressed beliefs regarding their group instruction and their demonstrated practices during group instruction. However, many consistent patterns evolved across the participants regarding their beliefs, attitudes, and practices.
The educational history and teaching background of the five teacher participants varied widely. Three had received alternative certifications in special education with two of them were originally trained in fields other than education. Their years of teaching experience ranged from 3 to 15 years, with those specific to special education ranging from 3 to 10 years. Current teaching assignments placed two in rural and three in suburban areas of the county. Three were in preschool classrooms and the other two in specialized early education programs, serving students with ASD and other communication delays from kindergarten to 2nd grade.

None of the participants had college coursework that was specific to ASD. Teacher E's comment, "it was an overview of special education and it had about 2 paragraphs about autism and that was about it." was representative of all of their educational experiences. Only one of the participants indicated that she had read any of the research literature relative to group instructions with students with ASD, indicating that she had read "several" articles.

The amount of professional development that each teacher had participated in varied. Although all had completed the 5-day intensive ABA/DTT workshop, other ASD specific training varied from zero to 8 other workshops attended, totaling 12 days of formal workshop training. The three teachers in preschool placements had all spent at least 3 days in the district's specialized preschool program for students with ASD and other communication delays observing and being mentored by the program's master teacher. This experience provided them with practical knowledge on curriculum,
classroom management, and teaching strategies that they used to modify their teaching practices.

"when I went into the other classroom, just the setup kind of gave me ideas when I came back in here to work with to change the structure of my classroom itself so that the child wouldn't be all over the room. Just that simple thing, just walking in and seeing what it looked like helped me a lot."

"Like when I went to the preschool, I picked up a lot from their circle that I never did before in my circle."

Three of the teachers also reported receiving in-class consultation from experienced autism consultants 3 to 4 times in the past year.

Staffing ratios were reported to be adequate by all of the teacher participants. All but one of the classrooms had higher than average numbers of educational assistants. Teacher D, who has only one educational assistant, stated that she'd like to have another educational assistant, versus a skills trainer, to assist her during group instruction. "A person that can help me with everybody not just that one child." With the exception of this classroom, the other classes had two full time educational assistants and one or two part time assistants. The preschool program for students with ASD and other communication delays also had a second teacher assigned to the program.

All of the classrooms were visually structured and areas were clearly established for group instruction. The classrooms appeared well supplied with a variety of instruction materials that were developmentally appropriate for the students enrolled in the programs. All of the teachers indicated that their classrooms did have a large quantity
of materials and that these were essential for effective instruction with their students with ASD. As Teacher E cryptically stated,

"...we need a lot of materials because the children have to touch it and feel it and see it. We use a lot of Velcro and we have a lot of manipulatives. It's hard to teach them from just worksheets."

The teacher participants' current beliefs, attitudes, skills, and practices regarding group instruction can be placed into six categories that were identified through the pattern matching process. These categories are: (a) purpose of group instruction, (b) personal competency, (c) paraprofessional staffing, (d) range of developmental levels and abilities within the group, (e) planning and developing group instruction lessons, and (f) assessing students needs and performance. A discussion of the findings in each category follows.

**Purpose of group instruction.** All of the participants noted that group instruction served a purpose for them and for their students. Additionally, they all stated that they enjoyed conducting group instruction with their students with ASD, although one teachers' body language seemed inconsistent. They appeared eager to discuss the topic and were not reluctant to have this researcher videotape a segment of their group instruction. The exception seemed somewhat ambivalent about conducting group instruction; however, the others demonstrated enthusiasm and enjoyment during this researcher's observation. The teachers shared how they benefited from conducting group instruction with their students.
"It's good for my development to make an activity fit each child. And it's good for me too because it helps me exercise how to speak with each child, how to instruct."

"...I hope that they hear what the other student is saying. I sometimes test them and ask the other child what he said."

"Also, you can observe them when you're doing your group. ... So how they behave in the two situations (individual and group instruction) ... it's really important to have the balance."

They unanimously cited the need to increase their students' social awareness and social skills as a primary reason for providing instruction in a group format everyday.

"I like to do it as a group because they all need the social skills."

"...the group instruction would be important for the reason that the children prefer to be by themselves or play by themselves and to have them within close proximity of each other gives me a chance to see how, what little bit of interaction they have, and how they work with it."n

"It's hard for them to respond and to attend and engage with peers or people their own age, so it's really good to have them do that while having someone there to help them along."

Another reason for using group instruction, cited by four of the teachers, was to increase their students' observational and generalized imitation skills. These teachers felt that these skills were pivotal for their students and also essential for accessing general
education opportunities. They placed a heavy emphasis on finding instructional opportunities to improve their students' skills in these areas.

"They are used to doing individual responses, but if they are in the regular ed, there are a lot of times when the whole group has to say things together, so practicing saying it together, pacing themselves, those kinds of skills, attending skills, you know, observational learning skills. There is so much that they get out of being with other children."

"Also, being able to pay attention to what your friend is doing, if it's the appropriate behavior, and learning from your peers."

Both of the early education teachers, teaching kindergarten through grade 2, articulated that preparation of their students to access general education learning opportunities was a major component of their programs. "We have each child assigned to a regular education class so that they can integrate for the activities that are appropriate for them." Teacher E quickly rattled off the various mainstreaming opportunities that occurred for each child in her class. She also elaborated on how one child's time was spent while in the general education classroom. "He is working on his skills of being a part of the classroom environment, small group instruction for reading, and group instruction for direct instruction (Di) for phonics in the regular ed." As she conducted a highly individualized circle time, it was evident that she was incorporating components of each student's general education program into the instruction. During circle time, she brought the student mentioned above to the front of the group and conducted a brief, Di phonics lesson from his general education phonics program. The activity incorporated
coordinating gross motor movements with the oral sounding out of a few consonant-vowel-consonant (CVC) words.

Both teachers also conducted reverse mainstreaming activities in their classrooms, bringing a small group of general education peers into their classrooms for structured games and playgroups several times during each week. Using general education curriculum, where possible, and simulating the behavioral requirements of typical general education classes, they attempted to prepare their students for the behavioral expectations of general education teachers and the types of activities in which they would be expected to participate.

The preschool teachers expressed more concern with their students' mastery of early developmental skills, including social awareness and appropriate social interactions.

"So, I think that the modeling and they look at each other. So, I think that it's very, very important. And like when you ask, "If you're wearing red please stand up." and then they look at the other - Oh, he's wearing red."

"...that's really important to me... they are looking at each other and are following what the other child is doing."

One teacher also shared that her students were easier to motivate to participate in the group than when she attempted to do one on one instruction with them.

"... they see the other peers interacting with me at circle time, so that's kind of hard to get a child to respond to you sometimes, unless you have that music and you have picture cards for them and they see the other peers interacting with me at circle time. So that's kind of hard to get out of a child one on one, if they're
disinterested or the type of material that you're presenting isn't exciting to them. They tend to get more excited in group when they see their other peers interacting."

"Even for such skills as brushing their teeth, we'll do a group instruction prior to that and then take them over to the sink where they can see their peers brushing their teeth. You know, just a little simple activity like that. Where I could take a child over there and try to have them brush their teeth, but if we're sitting there, with toothbrushes in the group, and they're having fun - they learn a lot faster that way."

**Personal competency.** Across all cases, concerns were expressed regarding the adequacy of their knowledge and skills in teaching students with ASD, in general, as well as within group instruction formats. All expressed the belief that they needed ongoing professional development, which was confirmed by the observations and the information generated through the nominal group process. One teacher summed it up with the following statement. "I don't think we have adequate training. I mean we're running by the seat of our pants sometimes, trying to figure out what to do and it gets really difficult at times."

Data analysis of their group instruction assessed the a) effectiveness of instructions, b) use of prompting c) appropriateness of feedback, d) appropriateness of curriculum used, e) level of engagement of children, f) format of instruction, and g) whether they incorporated social and communication interactions between/among students. Corroborating the teachers' beliefs, the data revealed that the observational
opportunities meeting criteria on these instructional components fell between 20% and 83% overall for the participants.

In addition, the nominal group process revealed twenty specific difficulties experienced by teachers that were believed to impact their delivery of "recommended practice" group instruction that could be ameliorated through professional development. These results are summarized in Table 4.2. The two that were prioritized by the teacher trainers participating in this process were a) the lack of embedding of individualized IEP objectives into the group activities and b) the lack of social skills instruction and peer interaction embedded into the group activities.
Table 4.2

*Teacher Knowledge Deficits Generated through Nominal Group Process*

<table>
<thead>
<tr>
<th>Deficit</th>
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<tbody>
<tr>
<td>Setting up data collection procedures and taking data on student's progress</td>
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<tr>
<td>Difficulty coordinating and implementing the use of differential reinforcement with a group</td>
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<tr>
<td>Differentiating for the variability in ability and developmental levels of students within groups</td>
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<tr>
<td>Fading reinforcement appropriately</td>
</tr>
<tr>
<td>Limiting the use of group instruction to circle time</td>
</tr>
<tr>
<td>Inadequate use of necessary visual supports (e.g., PECS) during group instruction</td>
</tr>
<tr>
<td>Using activities that are not age appropriate for the students</td>
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<tr>
<td>Lack of knowledge of child development sequence across domains and individual skills</td>
</tr>
<tr>
<td>Individualized IEP objectives are not embedded in the group activities</td>
</tr>
<tr>
<td>Opportunities for spontaneous student initiated behaviors are not created</td>
</tr>
<tr>
<td>Peer social skills interactions are not embedded into the group activities</td>
</tr>
<tr>
<td>Peer communication opportunities are not embedded into the group activities</td>
</tr>
<tr>
<td>Lack of effective use of behavior management strategies</td>
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<tr>
<td>Feedback is not contingent or does not immediately follow students responses</td>
</tr>
<tr>
<td>Missed opportunities to reinforce many appropriate behaviors</td>
</tr>
<tr>
<td>Pacing of instruction is either too slow or too fast</td>
</tr>
<tr>
<td>Support staff not provided schedules and specific assignments</td>
</tr>
<tr>
<td>Supplies are not ready or easily accessible during the instruction</td>
</tr>
<tr>
<td>Lack of knowledge of the research base that supports group instruction</td>
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<tr>
<td>IEP objectives do not reflect use of group activities or peer interaction</td>
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Paraprofessional staffing. Four of the teachers expressed that there was a need for professional development for their educational assistants. Not only was the knowledge and skill level of their assistants a concern for these teachers, but, the teachers' ability to manage their assistants during group instruction proved to be a challenge for them.

"... he (student) has the tendency of laying down and, you know for me, to - for him to repeat the motions, I cannot have a shadow because he leans on the person. So then for me, it is really hard for me to have somebody saying, 'sit down,' talking at the same time as me. I have a hard time dealing with these extra people."

"...and there are new ones, they seem to come in new each year. You have at least one new staff, so they do need to get the basic training, on PECS would be good and on the other basic methodologies that we teach."

"It's difficult, it is difficult... you need more support in order to keep it together and also doing group instruction is difficult if too many people are giving the child directions."

"...they're (paraprofessionals) giving instructions when I am, that confuses the student. Also, over prompting, not letting the student try for himself. Also, not knowing what to do with a lot of instruction."

The group instruction observations indicated that the paraprofessionals' skill level and understanding of "recommended practices" in prompting and feedback to students during the teacher's instruction did have an impact on the effectiveness of the instruction.
Although there were a few exceptionally skillful educational assistants observed, the majority did not provide appropriate levels of prompting or feedback to students. In many cases, the educational assistants' behavior was distracting and obstructed the child's ability to benefit from the group instruction. During instruction, assistants were observed pulling students onto their laps and playing with them, as well as, engaging them in side conversations. These activities resulted in the student's attention being diverted from the teacher to the assistant. Interestingly, this was particularly evident in the class of the teacher who did not indicate paraprofessional support during group instruction was an area of concern. The data analysis of group instruction in this class, however, revealed that the paraprofessional assistants only met criteria in providing feedback appropriately in 10% of the observational opportunities. Their prompting met criteria in 60% of the observational opportunities. This was an environmental constraint that impacted all of the teachers, subsequently having a negative impact on student learning during group instruction.

Four of the teachers indicated that they attempted to train the paraprofessionals that were assigned to their classrooms; however, they felt that what they could accomplish during the school day was inadequate. The scope of what the educational assistants needed to know and be capable of skillfully accomplishing to support the teacher during group instruction was elaborated on by one of the teachers. "They need specific training on how to support the group, how to engage the children, deliver the instruction, and deal with the behavior, and give an adequate response to that and just the entire - everything."
They shared their difficulties with their personal attempts to train their educational assistants on the job with an edge of frustration.

"I try to do what I can; but, I think we need something more formal. I wish I had a whole day to spend on it or four hours, a whole chunk of time. But, I don't, I have the afternoons and sometimes in the afternoons we do a lot of debriefing."

"...So a lot of it is when you have staff and you have children and you are doing group, it's like having a humongous group cause you're working on the adults on a different level than you are working with the kids"

As the teachers conducted their group instruction, this researcher noted that four of them found it necessary to attempt to prompt their paraprofessionals. The majority of the instances were to get the paraprofessionals to either provide or modify prompting to a student, usually with minimal effect. Their attempts took many forms, such as exaggerated facial expressions, head nods, proximity control, or moving closer to the assistant, modeling, and verbal directions. Admirably, the teachers attempted to do this without losing their place or the attention of their students.

*Range of developmental levels and abilities within the group.* The differences in developmental levels and abilities of their students added to the complexity of teaching in a group instruction format for all of the participants.

"All their different levels and being able to think about what you're going to get out of each child and what question you're going to ask them. You have to keep switching. Maybe you're teaching about dinosaurs but they are all learning different things and you have to ask them questions in a manner that they can
understand. Like for one of my students it would be a little less wordy and for another one I can be elaborated in my speech. And I have to still remember that I'm thinking about dinosaurs! But, I have to change how I communicate with each child so that they are able to respond."

"... I don't think any of us have enough training for what we deal with every single day and for the type of spectrum that we see in these children."

This range of developmental levels and abilities was both an expressed concern and an observed factor in several areas in which they struggled: (a) planning, (b) behavior management, and (c) delivery of instruction during group.

*Planning and developing group instruction lessons.* Several issues arose in planning and developing group instruction lessons: (a) time involved in planning, (b) development of group lesson plans, and (c) embedding of individual IEP objectives. Some of the teachers' responses were not corroborated by the data analysis of their actual group instruction. As this researcher only observed one group instruction session for each teacher, it is possible that this was an anomaly and not a consistent divergence.

All of the teachers indicated that planning was a challenging and time-consuming activity for which they had inadequate time. Although some indicated that they did plan daily and others monthly, they did not develop specific lesson plans for circle time. Those reporting that they planned monthly indicated that they spent several days, mostly at home, developing their teaching plan and writing out their activities for each day. Several indicated that they had fixed activities that they did during their circle time and
that they used the same activities daily, making adjustments based on the responses of the children.

"I have a pattern of what I'm doing and I have certain songs that I like to do and I change them. It doesn't take long to prepare for it."

"I know, like certain activities, I pretty much know all that is involved and I pretty much mix it up according to how the day's going."

Although all indicated that they do plan instruction to address their students' IEP goals and objectives, they shared that they didn't have a formal process for embedding their students' individual objectives into their group instruction. When asked if they had specific objectives for the children during each group activity the responses varied. It was apparent that the preschool teachers had specific objectives that they incorporated into their activities; however, it did not appear that they were planning group instruction specifically to target their students' individual objectives. Nor did it appear, in many cases, that adaptations had been developed for the group activities that provided opportunity for successful participation for all of the students. Teachers shared their practices regarding incorporating students' objectives into group instruction.

"No, I haven't listed any. They are kind of in general cause they are throughout the day cause there's several different activities that it may apply to whether it's an attending goal, a social goal, whether it's a communication goal."

"Yeah, usually like shape recognition or a color or like a gross motor.....every song and every activity has an objective."
"Oh yes, definitely. Cause most of the IEP goals will be attending skills, that they can sit and attend, participation skills during circle time, sharing skills, verbal language skills that we are trying to target, especially with the kids that aren't as verbal, and compliance skills, also. So it all ties into the IEP goals."

"Examples of those activities would be interacting with the songs whether it be gross motor, where they have to move their hands, or just listening skills, to be able to know when to do a certain action, observation. They are having to look at me and to imitate the motions that I am doing."

"Yes, each child has their IEP and they have their goals from the IEP that we are integrating into centers and instruction throughout the day."

However, during the observations, two of the preschool teachers did not demonstrate any individualization within their group activities and the other preschool teacher demonstrated individualization during only 20% of the observation intervals. This suggests that individualized planning was not occurring in these classrooms. In the two early education classrooms, kindergarten through grade 2, individualization was apparent during 80% and 90% of the observation intervals. One of these teachers said, "I look at each thing and try to break it down into what level each kid is learning." She also indicated that for art, reading, and math group lessons it usually took 30 minutes to plan and get the materials ready, adapting for individual students where necessary.

The preschool teachers predominantly used songs as a vehicle for instruction during their circle time. The instruction during songs was focused on imitation of gross and fine motor movements, with simple one step receptive instructions and early learning
skills, such as "pick one" and "What color is this?" interspersed between songs. They used seven to nine songs during their morning circle, whereas the early education teachers used only three or four songs interspersed through a majority of other types of academic, social, and direction following instruction.

It was also interesting to note that although all of the teachers had expressed that increasing social awareness and social skills was very important, the data analysis of their actual group instruction indicated that social interaction and social communication were only embedded between 0% and 40% of the observation intervals. Two of the three preschool teachers did not embed any social communication between their students during group, while the third teacher did during 30% of the observation intervals. The embedding of social interaction and/or social communication in the preschool classes occurred in 3 of 10 activities in one class and in 2 of 10 activities in the other class.

The early education teachers were slightly more consistent, however, their percentages were no higher. One of them embedded both social interactions and social communication during 40% of the intervals. Instruction incorporating social interactions and communication occurred in 5 of the 10 activities observed during her group instruction. The other teacher embedded social interaction and social communication during 30% and 10% of the intervals, respectively. These instructional opportunities occurred in 2 of the 9 activities observed during her group instruction.

Assessing students needs and performance. All of the teachers indicated that they were using observation and anecdotal reports of their paraprofessionals to assess their students' performance during group instruction. The teachers did not have any formal
data collection devices that were used for group instruction. One teacher reported that she had had her educational assistant take frequency counts on the out of seat behavior during group instruction of one student in order to establish baseline and to evaluate their progress on decreasing the number of occurrences.

There seemed to be a level of discomfort with taking data. Several teachers stated that they were using checklists periodically to evaluate progress; none, however, indicated that they took consistent daily or weekly data on skills taught in group instruction, and only two reported regular data collection on individual teaching sessions.

"It is purely observation. I don't have a checklist that I go over."

"...we don't have a set up sheet or checklist for the group. I'm sure we could make one but we don't have one."

"What I've started this year because of the necessity of collecting data and it's new and I haven't gotten it developed to the point where its easy to use is, I did a summary of the IEP goals... And every week they (educational assistants) collect data on the kids and they give me their reports... It's anecdotal data."

"I need to do more in this area. I don't have anything specific set up... observation, anecdotal, group discussion as a team"

Several of the teachers indicated that they had made data sheets that summarized their students' IEP goals and objectives. One teacher reported that she looked at her data sheets, developed from IEP objectives, to see what each child should be working on. However, when this researcher examined the data sheets, they were written toward global benchmarks and did not delineate the incremental skill progression toward their
achievement. It was therefore impossible to determine from the data what the student's actual level of skill acquisition was or what instructional or prompting levels should be used.

The teachers' appeared to struggle with developing useful data sheets for individual instruction. Most had not even attempted to develop any data collection systems for group instruction. One teacher said, "I think that data, taking data, is really hard." This statement seemed to describe the sentiments of all five participants.

Summary. The teachers expressed consistent beliefs in five of the six areas discussed above. This researcher also found the teachers' practices within grade levels to be very similar in these areas as well. Group instruction provided the teachers the opportunity to observe their students' social awareness and social skills. The teachers concurred that the primary reason they provided group instruction was to increase their students' social skills. However, the data analysis of their actual group instruction during morning circle did not reveal that they were placing a priority on incorporating instructional activities to address the peer interaction needs. The preschool teachers did provide many instructional opportunities for generalized imitation of the teacher; however, there was only one structured opportunity for imitation of a peer. The two kindergarten through grade 2 teachers were passionate about the importance of preparing their students for participation in general education. The degree to which their highly individualized group instruction replicated activities seen in many general education classrooms confirmed their commitment to this goal. However, there were still many activities that did not incorporate any social interaction between peers.
The need to access ongoing professional development was articulated by all of the teacher participants. During the interviews they all indicated that they needed more training in some area. Through their voice tone and body language, they, at times, revealed a lack of confidence about their performance in some aspect of their teaching. They voiced a need to strengthen their skills in order to meet the challenges that they faced teaching their students with ASD. All of the teachers also struggled with the challenges associated with paraprofessionals that lacked adequate training and experience. There was a sense of frustration about needing to train their paraprofessionals while also trying to teach their students. As they described the difficulties they had experienced and as the researcher observed the difficulties they encountered, their frustration was almost palpable at times.

Planning and instructional delivery were definitely complicated by the range of developmental levels and abilities within their groups. All of the teachers voiced this as a challenge. None had found an efficient process for planning group instruction that was individualized appropriately for the range of students they served. They relied mainly on observations and anecdotal reports of their paraprofessionals to gauge the skill acquisition of their students. Developing forms for collecting data and actually taking data was an area that they all felt was difficult. Although, they expressed a belief that they could and should do it; they seemed unsure of how to go about it.

Have the Special Education Teachers Who Have Received Intensive Training in ABA and One-to-One DTT Instruction Generalized Those Skills to Group Instruction?
Generalization refers to "relevant behavior under different, non-training conditions (i.e., across subjects, settings, people, behaviors, and/or time) without the scheduling of the same events in those conditions as had been scheduled in the training conditions" (Stokes & Baer, 1977, p.350). This study attempts to examine the degree to which the teacher participants show evidence of employing "recommended practice" ABA/DTT techniques in their classrooms during group instruction as the training they received focused on one-to-one instruction only. The findings relevant to utilization of DTT techniques will be discussed below under the heading Teaching in a Systematic Antecedent-Response-Consequence Cycle.

Using the principles of ABA. The findings relevant to the teachers' implementation of the elements considered necessary for an intervention to be considered under the umbrella of ABA principles will be discussed according to those outlined in the literature review. As previously identified by Green (2001), the elements that are necessary for an educational intervention to be considered under the ABA umbrella are: (a) noninferential assessment; (b) frequent collection of observational data; (c) targeting clearly, observably defined behaviors/skills that are deficient or excessive; (d) teaching in a systematic antecedent-response-consequence cycle; (e) assessing data and making adjustments in instructional procedures when the data indicates that adequate progress is not being made. The findings relevant to each section are discussed below.

Noninferential assessment. Noninferential assessment procedures were not observed during the group instruction sessions. Although teachers discussed the periodic use of checklists that they had developed from their students' IEP goals and objectives,
formal ongoing noninferential assessment was not evident. Several teachers reported conferencing with their paraprofessionals and reviewing anecdotal data compiled by them to determine how their students were progressing against their IEP objectives. However, this researcher feels that the data do not appear to support a finding that the teachers engaged in regular noninferential assessment to determine what skills their students had mastered and where they were on the continuum of skill development against their objectives or in the scope and sequence of their curriculum.

**Frequent collection of observational data.** Only one teacher indicated that she had her educational assistants take data regularly during the group instruction. However, during the group instruction observation in her classroom, no data collection occurred. Another teacher reported having her educational assistants record frequency data when she was implementing a behavioral program to reduce inappropriate behavior during group instruction earlier in the school year. In fact, this researcher did not observe any data collection by any of the teachers or educational assistants. Although several classrooms did have data sheets that listed the students' IEP objectives, there was little visible evidence that frequent data collection was occurring in any of the classrooms. In fact, only two of the classrooms displayed evidence suggesting that frequent collection of observational data was occurring at any time during the day. Moreover, these finding reveal that this ABA element is definitely not occurring during group instruction in these classrooms.

**Targeting clearly, observably defined behaviors/skills that are deficient or excessive.** During the group instruction observations, the skills being targeted were
obvious deficiencies for the majority of the students. All of the teachers expressed the belief that they were targeting deficient or excessive skills in their students even though they lacked assessment data to confirm it. In the preschool classrooms, the scope and sequence of early developmental skills seemed to drive the activities and curriculum.

Two of the preschool teachers explained that their knowledge of the scope and sequence of early developmental skills and tools such as the Brigance Early Inventory were used to develop individualized goals and objectives for their students. Thus, their orientation was toward the group gaining those skills as they planned their activities, rather than amassing individualized lists of skill deficits/excesses and then analyzing the compilation in order to develop group instruction.

"...like cutting, the process is the same, one might be more at snipping and the other at cutting up the line; but, its going to be a progression. They all need to work on the skill."

"I have a theme for the month and then what I'm going to work on, like shape, triangle, color, the numbers..."

**Teaching in a systematic antecedent-response-consequence cycle.** All of the teachers employed a discrete trial instructional approach during their group instruction. The teachers relied heavily on their educational assistants for prompting support; however, they often provided the prompting themselves as they moved between their students during instruction. Their skill levels varied, as did their ability to move fluidly between students; however, they did follow the antecedent-response-consequence cycle. Providing contingent feedback was the most difficult for them as they attempted to
maintain their instructional momentum with the group. The data analysis of the group instruction sessions conducted by each of the teacher participants revealed that their use of discrete trials had generalized to the group instruction context. A comparison of the teachers' actual discrete trial performance compared to optimal performance outlined in the literature will be addressed in the next section.

Assessing data and making adjustments in instructional procedures. There was evidence during the observations that teachers adjusted their instructional procedures according to their students' responses during group instruction. Some were more skilled at this than others; however, all of them did make adjustments during their group instruction. When students failed to respond to an instruction, the teachers provided corrective feedback, adjusted prompting levels, or simplified the demand, if the student still failed to respond. Within sessions, the teachers were usually all making appropriate adjustments in their instruction.

However, there was little evidence that teachers were using historical data to determine exactly where their students were performing or how best to instruct them prior to group instruction sessions. Also, there was no evidence that teachers were communicating to their aides what level or types of prompts should be used with the individual students. The observations revealed that although most of the teachers individualized and performed some assessment activities, the information revealed in the structured interviews indicated that they were employing a haphazard process that lacked the procedural integrity to meet the standards associated with ABA.
Summary. The data revealed that during group instruction, the teachers were not adequately employing most of the elements that were considered necessary for an educational intervention to be considered under the ABA umbrella. Although some noninferential assessment was occurring, there was inadequate evidence to support a finding that it was occurring during or specifically in relation to group instruction. Frequent collection of data during group instruction was not in evidence.

Although the teachers were targeting clearly, observably defined deficit or excessive behaviors or skills, it seemed to be more a matter of chance than a function of carefully employed ABA procedures. During instruction the teachers did make appropriate adjustments to their instructional procedures. They adjusted instructions, prompts, and feedback in response to their students' behavioral responses. However, as discussed in the previous area of targeting clearly defined behaviors, it appeared to occur spontaneously during instruction without the benefit of any formal data analysis or planning.

The one area in which all of the teachers demonstrated generalization was in the use of a systematic antecedent-response-consequence cycle for instruction. They used various formats of DTT, as they conducted their group instruction. The data provided evidence of (a) choral, students responding in unison; (b) sequential, individual trials rotated between the students; and (c) overlapping, the opening of a trial for a student before the closing of a trial already initiated for other students. Employing all three formats allows for maximum instruction to be delivered to all students in the group and to flexibly meet the individual instructional needs of each student.
The research indicated that the potential benefits of the overlapping model were the opportunity afforded for social interaction and observational learning (Taubman et al., 2001). The teachers employed this format infrequently, preferring to use the sequential and choral formats predominately. The use of choral and overlapping formats was a generalization of the basic format of individual trials that had been introduced in training. Although skill levels varied, they all demonstrated an understanding of DTT and consistently employed an antecedent-response-consequence cycle.

_How Closely Do Special Education Teachers' Current Skills and Practices Match "Recommended Practice" Group Instruction Methods for Students with ASD?_

In general, the literature elucidates the need for teachers of students with ASD to demonstrate knowledge of: (a) the learning styles of these students, (b) each student’s individual needs, and (c) the ABA procedures that facilitate engagement and learning (Anderson & Romanczyk, 1999; Green, 2001). For this study, it was important to identify the specific instructional components that are necessary for effective group instruction with students with ASD. The instructional components that resulted in skill acquisition and a reduction in behaviors related to the major deficits associated with ASD have been identified in the research literature. This chapter focuses on a comparison of these "recommended" instructional methods with the actual methods employed by the teacher participants.

What are the elements of "recommended" group instruction methods for students with ASD? In the literature and corroborated by the teacher trainers participating in the nominal group process eight components were identified: (a) effective delivery of
instructions, (b) using the range of DTT formats, (c) selecting appropriate, individualized curriculum, (d) embedding of social interaction and social communication between/among students, (e) prompting appropriately, (f) providing feedback appropriately, (g) maintaining student's engagement, and (h) promoting generalization.

These instructional components were examined in a video analysis of a sample of each teacher's group instruction.

A comparison of the collected data and analysis from each case for similarities and differences provided insight into the recurrent processes and patterns across cases. The analysis of the teacher participants' actual group instruction for evidence of mastery of the identified instructional components, facilitated by the observation checklist, was the basis of the gap or deficiency analysis. The categories that Pajak and Tillman (1987) anticipated "performance problems" to be attributable to were: (a) a skill or knowledge deficiency, (b) an incentive or motivation deficiency, (c) an environmental constraint, or (d) a combination of the three. The discussion of the findings will be broadly organized around these categories, with a focus on skill and knowledge deficiencies that could be ameliorated through professional development opportunities.

Skill/Knowledge deficits. The teachers demonstrated many skills and significant insight into their students' abilities and behaviors. Four of the teachers were completely unfamiliar with the group instruction research literature associated with ASD. The literature reviewed by the remaining teacher was very limited. The teacher participants demonstrated varying levels of underlying knowledge and skills in their implementation of the eight components of instruction outlined previously.
Three of the instructional components are also known as steps in conducting a discrete trial instruction. These steps are: (a) the cue or delivery of *instruction* beginning the trial, (b) the *prompt*, provided with the instruction, if necessary, to assist student in learning the correct response, and (c) the consequence or *feedback* (reinforcement or corrective) provided contingent on student's response. Separate analysis of these steps allowed an in depth examination of the participants' discrete trial teaching. Table 4.3 summarizes the data analysis of the teachers' actual group instruction during their morning circle. Table 4.4 summarizes the interrater reliability data for the video analysis of this instruction.
Table 4.3

Percentage of Intervals in which Teachers Demonstrated "Recommended Practice" Behaviors

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<tr>
<th>Instructional Components</th>
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<th>C</th>
<th>D</th>
<th>E</th>
<th>Mean</th>
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<tr>
<td>Instruction Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>83%</td>
</tr>
<tr>
<td>1. Given once, no repetition</td>
<td>60%</td>
<td>80%</td>
<td>90%</td>
<td>40%</td>
<td>90%</td>
<td>72%</td>
</tr>
<tr>
<td>2. Clear (not too wordy, appropriate for task)</td>
<td>70%</td>
<td>100%</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
<td>92%</td>
</tr>
<tr>
<td>3. Teaching materials ready and organized (no unnecessary delays)</td>
<td>80%</td>
<td>90%</td>
<td>90%</td>
<td>100%</td>
<td>90%</td>
<td>90%</td>
</tr>
<tr>
<td>4. No reliance on artificial cues (fast, pace, calling students' names, &quot;ready?&quot;)</td>
<td>50%</td>
<td>100%</td>
<td>100%</td>
<td>30%</td>
<td>100%</td>
<td>76%</td>
</tr>
<tr>
<td>5. Engaging and enthusiastic (not over the top or flat)</td>
<td>30%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>90%</td>
<td>84%</td>
</tr>
<tr>
<td>Prompt: prompted appropriately (least intrusive, with instruction)</td>
<td>70%</td>
<td>90%</td>
<td>100%</td>
<td>80%</td>
<td>100%</td>
<td>88%</td>
</tr>
<tr>
<td>Feedback: provided feedback appropriately (contingent, timely, frequency)</td>
<td>20%</td>
<td>90%</td>
<td>70%</td>
<td>50%</td>
<td>100%</td>
<td>66%</td>
</tr>
<tr>
<td>Curriculum Mean</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70%</td>
</tr>
<tr>
<td>1. Individualized for each child</td>
<td>20%</td>
<td>90%</td>
<td>0%</td>
<td>0%</td>
<td>90%</td>
<td>40%</td>
</tr>
<tr>
<td>2. Age Appropriate</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Communication/Social Interaction Mean</td>
<td>0%</td>
<td>40%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
</tr>
<tr>
<td>1. Incorporated social interactions between/among students</td>
<td>0%</td>
<td>40%</td>
<td>10%</td>
<td>40%</td>
<td>30%</td>
<td>24%</td>
</tr>
<tr>
<td>2. Incorporates social communication between among students</td>
<td>0%</td>
<td>40%</td>
<td>30%</td>
<td>0%</td>
<td>10%</td>
<td>16%</td>
</tr>
<tr>
<td>Engagement: 1. Attending/engaged (looking at teacher and or materials, in area)</td>
<td>80%</td>
<td>70%</td>
<td>40%</td>
<td>60%</td>
<td>90%</td>
<td>68%</td>
</tr>
<tr>
<td>Mean</td>
<td>48%</td>
<td>82%</td>
<td>68%</td>
<td>58%</td>
<td>82%</td>
<td>68%</td>
</tr>
</tbody>
</table>
Table 4.4

*Inter-rater Reliability for Intervals of Teacher "Recommended Practice" Behaviors*

<table>
<thead>
<tr>
<th>Instructional Components</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td>80%</td>
<td>94%</td>
<td>84%</td>
<td>84%</td>
<td>98%</td>
<td>88%</td>
</tr>
<tr>
<td>Prompt</td>
<td>70%</td>
<td>90%</td>
<td>80%</td>
<td>50%</td>
<td>100%</td>
<td>78%</td>
</tr>
<tr>
<td>Feedback</td>
<td>90%</td>
<td>90%</td>
<td>80%</td>
<td>50%</td>
<td>100%</td>
<td>82%</td>
</tr>
<tr>
<td>Curriculum</td>
<td>95%</td>
<td>95%</td>
<td>85%</td>
<td>95%</td>
<td>95%</td>
<td>93%</td>
</tr>
<tr>
<td>Communication/Social Interaction</td>
<td>100%</td>
<td>85%</td>
<td>95%</td>
<td>95%</td>
<td>90%</td>
<td>93%</td>
</tr>
<tr>
<td>Engagement</td>
<td>90%</td>
<td>90%</td>
<td>80%</td>
<td>100%</td>
<td>90%</td>
<td>86%</td>
</tr>
<tr>
<td>Mean</td>
<td>84%</td>
<td>91%</td>
<td>84%</td>
<td>79%</td>
<td>96%</td>
<td>87%</td>
</tr>
</tbody>
</table>
**Instruction.** There are four components that were identified to impact the effectiveness of the delivery of instructions within group activities. These are (a) readiness of required teaching materials, (b) use of appropriate language for the students, (c) style of delivery, and (d) instructions infused without breaking the flow of the activity. Teachers need to have teaching materials ready and organized to prevent unnecessary delays between providing the instruction and beginning the activity. Instructions should begin without the use of artificial cues, such as saying "ready" prior to issuing instructions, as reliance on such cues diminishes generalized attending (Leaf & McEachin, 1999). Also, the instruction needs to be clear to the student. This requires that they be (a) clear and task-relevant, (b) at a language level that matches the student's receptive language ability, and (c) non-ambiguous (Koegel & Koegel, 1995). The instruction should be given once in an engaging and enthusiastic manner, not over the top or flat. Finally, during group activities, brief instructional exchanges should be inserted within ongoing activities in a manner that does not break the flow of the activity or interrupt the students' engagement (Hoyson et al., 1998).

Three of the teachers met criteria on 94% of the occasions in instructional delivery. All of the teachers had materials organized and ready an average of 90% of the time. The two teachers displaying deficits in the delivery of instructions struggled most when a student failed to respond to an instruction or did not attend. Instead of providing appropriate feedback to the child's incorrect responses, they continued to repeat their instruction multiple times and/or repeatedly called the student's name. One teacher also lacked an engaging or enthusiastic delivery and struggled to formulate clear, concise
instructions. However, she did vary the complexity and wordiness of her instructions across children, indicating an understanding of a need to instruct at an individualized level. Overall, the data revealed a need for continued professional development in the delivery of instruction for two of the five teacher participants.

*Prompts.* Prompts are used in conjunction with an instruction to evoke a correct response from the child. In general, a least to most intrusive hierarchy of prompts is recommended. Prompts should occur at the same time as the instruction or within a brief period thereafter. The level of prompting needs to be adequate for the child to successfully complete the task (Smith, 2001). However, to prevent prompt dependency, it is important to reduce the level of prompting systematically through prompt-and-test and prompt-and-fade procedures. The use of systematic time delay to insure that students are presented with the opportunity to respond prior to receiving assistance is also a useful strategy to prevent overprompting.

The same three teachers that achieved high percentages in instructions also achieved 90% or greater in employing and delivering prompts appropriately. Although criteria on prompting was higher for the other two teachers than instruction had been, lack of prompting or inadequate movement up or down the prompting hierarchy impacted the effectiveness of their instruction. Their students' success may have been significantly increased had they delivered appropriate prompts with their instructions where indicated by student performance. Prompting delivered by the supporting paraprofessionals was evaluated separately and did not reflect on the teachers' percentages.
Feedback. Student learning occurs as a result of the consequences that follow their response to an instruction. This makes feedback a very important component in any teaching trial. Although all students do not require feedback on every response, it is important to provide each student within the group with feedback at a frequency level that facilitates their learning. Feedback, reinforcement or correction, needs to be contingent on the responses of the students (Smith, 2001). It also needs to be timely, occurring within a few seconds of the students' responses. It is also important to note that reinforcement in a group must still be individually reinforcing for all students or unique reinforcers for individuals must be provided as necessary.

Only two of the teachers of the previously mentioned top three teachers also met criteria on 90% or better of the occasions on this component. The remaining three teachers had substantial difficulty with providing feedback contingent on student performance. Although they infused many individual trials into their group instruction, they often failed to provide timely feedback. Also, there was often a mismatch between the behavioral responses of the students and the teachers' feedback. The feedback failed to be contingent on the child's response, resulting in a substantial number of nonresponses and extremely poor responses receiving reinforcement.

Overall, the level and type of reinforcement employed during group instruction was demonstrated to be inadequate to motivate the students. There was an abundance of verbal praise, which did not seem to actually be reinforcing to a number of the students, that was not paired with other, more significant and motivating, reinforcement. Several teachers commented on experiencing a great deal of difficulty using tangible
reinforcement during group instruction. Difficulties were reported with (a) retrieving reinforcers, (b) dealing with the complaints of peers who did not receive reinforcement simultaneously, and (c) maintaining the flow of instruction while attempting to deliver contingent reinforcement.

Curriculum. The age appropriateness of curriculum and activities was examined, as well as, its adaptation and individualization for each student. The literature reveals the need for an assessment/curricular link (Hoyson et al., 1984; Hoyson et al., 1998; Strain & Cordisco, 1994). Curriculum elements that are significant for group instruction are: (a) it must be individualized for each student in the group, (b) the impact of instruction must be individually assessed, and (c) curricular objectives need to be revised individually based on progress (Brown, et al., 1980). Learning activities used within the group must meet the individual learning needs of the students, as well as, their interests and developmental levels.

An integrated curriculum approach provides opportunities for learning related to all areas of development and promotes skill development across multiple domains (e.g., social/emotional, language, adaptive behavior, cognitive, and physical). During group instruction, students need to practice their domain specific objectives and also interact with each other throughout the lesson (Hoyson, Jamieson, & Strain, 1984). The curriculum needs to be structured so that group lessons provide students with the opportunity for improvement in (a) academics/cognitive skills, (b) group behavior, and (c) peer interaction skills. The use of alternative materials and visual supports to assist student learning was also considered within this category. Handleman and Harris (1994)
stated, "A well balanced and orchestrated curriculum is typically the result of careful planning and the systematic organization of educational experiences" (p. 8).

The kindergarten through grade 2 teachers met criteria 95% of the occasions. None of the teachers had incorporated adequate assessment (data collection) during group instruction to gauge the impact of their instruction on their students' learning. The preschool teachers used age appropriate curriculum; however, they failed to adequately adapt the activities to meet the individual abilities of their students. The teacher who failed to individualize at any time during the observation stated during the interview, "...I need to focus on why we are doing a particular activity. It's something that I'm basically trying to figure out." Her lack of knowledge of early childhood development and instructional activities to support skill development across the domains affected her instruction. The teachers also demonstrated a need for professional development on integration of cognitive/academic, group behavior, and social interaction objectives within and throughout group lessons.

_Social interaction/communication_. This component evaluated the teachers' inclusion of structured peer-to-peer interaction or social communication within the context of the group instruction. All group instruction activities need to be designed to provide for the integration of peer social interaction and communication instructional opportunities. These are two of the primary deficits of ASD. Improvements in these areas should lead to improvements in overall functioning. As these skills do not develop in isolation, it is necessary to take advantage of the group context to target these skill deficits (Strain & Cordisco, 1994). Although social awareness is a precursor to social
interaction, activities incorporating interaction are also essential. The goal is to construct activities so that students must interact in order to complete the task and receive reinforcement.

Although all of the teachers had remarked on the importance of developing these skills in their students with ASD, the analysis of their actual group instruction indicated that they failed to provide adequate instructional opportunities to teach to these deficits. The early education teachers did include a few opportunities for their students to practice handing materials to one another and using associated language, such as, "Here" as they did so. Both of them also enlisted one of their students to be the leader of an activity, placing them before the group to model the responses for the remainder of the group. The preschool teachers incorporated some social awareness activities, as well as, hand holding and saying, "hello" to peers within their morning circle activities. Data analysis revealed that the teachers incorporated only a minimal amount of peer interaction or communication instruction within the context of their morning circle activities.

*Engagement.* The level of student engagement varied across teachers as was shown in chart 4.3. Engagement met criteria when *all* of the students remained engaged. Engagement was defined as the students minimally looking at the teacher and/or the materials they were using in the group area. Engaged time within programs has been shown to be an important factor in student outcomes. Observation intervals where even one student was not engaged were scored as needing improvement. The teacher meeting engagement criteria during 90% of the intervals also met criteria across the components of discrete trial and in the individualization of the curriculum. The engagement rating for
the other teacher, who had also met criteria across the components of discrete trial and individualization of curriculum, fell to 70% due to one activity that occurred across three observation intervals. The rates of student engagement for two of the preschool teachers were quite low. Professional development to increase teachers' understanding of the factors that contribute to engagement and ways to manipulate the variables so that rates increase would appear to be beneficial.

*Format.* Distributed trials are preferable for generalization and understanding the context where a response is to be used (Mulligan et al., 1980). During group instruction there are also several formats of discrete trials (sequential, choral, and overlapping) that can be effectively employed within a group instructional context. The research indicated the potential benefits of the overlapping model to be the opportunity afforded for social interaction and observational learning as well as a reduction in attentionally motivated and demand provoked acting out (Taubman et al., 2001).

Trials were distributed within and across the activities. The data revealed that the teachers relied on sequential and choral formats for instruction, predominately. Sequential most frequently occurred from right to left or left to right, however, there was random rotation between students as well. The data revealed that the teachers actually employed the overlapping format infrequently, an average of only 20% of the observation intervals. This suggests that the teachers would benefit from professional development on this topic.

*Generalization.* Group instruction is a naturalistic instructional format that by its very nature assists students in learning how to function in other environments. Students
learn to tolerate (a) close proximity to others, (b) waiting while attention and reinforcement are directed to others, and (c) turn taking without specific teaching trials. Group instruction provides the opportunity for students to emit targeted behaviors around others who are a part of their natural environment, which has been demonstrated to improve generalization. It provides instructional opportunities to facilitate (a) observational learning, (b) peer interaction and communication, and (c) generalize skills (Brown & Holvoet, 1982). Motivational variables are also more easily and effectively controlled and manipulated in group versus one-to-one instruction. The spontaneous occurrence of skill generalization within the context of group instruction provides additional opportunities for reinforcement of the skill's use. Numerous group activities provide natural consequences that are enjoyable for children with ASD (e.g., selecting a song for the group to then sing and imitate teacher motions, promoting generalization and sustainability of the skills).

For students with ASD, teaching to facilitate generalization needs to occur throughout the day as a regular part of all instruction. It has long been recognized that there is a need to plan for generalization from the beginning of skill acquisition. Stokes and Osnes (1989) reconceptualized the principles of generalization as follows: (a) exploit current functional contingencies, (b) train diversely, and (c) incorporate functional mediators. Elements of training diversely, such as providing (a) a variety of stimulus and response exemplars for a skill and (b) variable and naturalistic instructional antecedents and consequences within a wide range of activities, are easily incorporated into a group instruction session.
It was evident in all of the classrooms that skill generalization was occurring within the context of group instruction. There was evidence of the principles of generalization being applied, however, there were also many missed opportunities to fully exploit the generalization opportunities. Observational learning and interaction opportunities clearly could have been increased.

**Incentive/Motivation.** All of the teachers voiced the opinion that they enjoyed conducting group instruction. Even though one teacher did present a mixed message regarding actually enjoying group instruction, all seemed committed to continuing to include group instruction in their daily activities. All indicated that group instruction served a purpose for them and their students. Three of the teachers reported that their students' parents were unopposed to the inclusion of group activities during the day. Two of the preschool teachers did share that one of their student's parents did not believe that their child benefited from group instruction and were more concerned about the amount of time their children received one to one instruction during the day. The real disincentive seemed to be the degree of complexity of managing the group and employing effective instructional techniques with multiple students with ASD simultaneously. The teachers unanimously indicated that group instruction was challenging. However, this sentiment was also expressed by the experts and is documented in the literature (Taubman et al., 2001).

**Environmental constraints.** The three primary environmental constraints impacting the delivery of "recommended practice" were (a) lack of skillful, well-trained paraprofessionals to assist in the delivery of group instruction, (b) inadequate planning
time, and (c) accessing ASD training. Data analysis indicated that paraprofessional support during group instruction meet criteria at best 60% of the observational opportunities, with an average of 28% for prompting and 14% for providing appropriate feedback. The teachers commented on their lack of time to plan. The research indicates that analysis of data and planning for individualized instruction is necessary for effective group instruction for students with ASD (Hoyson et al., 1984). The lack of individualized planning demonstrated, at least partially, a function of the teachers competing demands for their very limited noninstructional time during a day.

"I come in here at 7:30 in the morning and the kids come off the bus and I don't have planning time in the morning. And in the afternoon we have so many meetings and we have ISPED. There's no planning time. All the planning is done at my house, basically. I don't have time to plan at school. There is just not enough time for what I need to do."

Two other environmental constraints involved materials and training. Although the teachers reported having adequate materials, it was apparent to this researcher that there was a lack of individualized visual and material supports for activities used during group instruction. The lack of these materials was impacting negatively on students' performance in some cases.

The availability of training was also a constraint. Several teachers commented on the difficulty they experienced accessing training when it was available.

"It's left to us to go and figure out when we can do it (observe master teachers). We don't get any assistance in doing it."
"We can use our school funds and that's wonderful, but it would also be nice if it were available and not in our school funds because we need to spend that money on the children. I kind of think when I go to something for professional development, it's helping me and it's also helping them, but there's so much stuff we need in the class I would rather spend the school funds on the things that the children will actually use."

The teachers in the rural areas experienced more frustration accessing professional development opportunities due to the distance that they needed to travel.

"We feel a little bit neglected because everything is so concentrated in that area, over there. Even the meetings and everything. The same thing that is hard for us to drive all the way over there, so why can't people come over here to this complex."

What are the Current Professional Development Needs of Special Education Teachers of Students with ASD in Planning and Implementing "Recommended Practice" Group Instruction Methods?

Teaching students with ASD is always a challenging endeavor, requiring extensive decision-making in the moment, as well as, ongoing analysis of students' performance and individualized planning. The task of planning and implementing "recommended practice" in group instruction methods is complex and expansive requiring the integration of a wide range of knowledge and skills. The findings discussed in the preceding sections provide the basis for this section. A discussion of the professional development needs of teachers follows.
Although it may seem obvious to many, knowledge of the scope and sequence of child development across the domains; as well as, the scope and sequence of primary academic curriculum is an essential underpinning for instructional planning for young students with ASD. Without this knowledge, it is difficult, if not impossible, to engage in strategic intervention planning to increase students' abilities across the range of skill deficits. This knowledge also contributes to teachers' understanding of the interwoven and interdependent nature of many facets of development, thereby allowing them to organize instruction appropriately to build a solid developmental and academic base. Instruction must be sequenced appropriately to ensure that prerequisite skills across domains are in place for satisfactory performance of more advanced skills. This indicates the importance of teachers assessing their background knowledge in the scope and sequence of child development across all domains as well as their knowledge of primary academic curriculum. This knowledge base was absent in one of the participants in this study and severely reduced her understanding and ability to plan and develop instructional activities that targeted specific student needs. Where either of these knowledge bases is absent or incomplete, it is a necessary area for professional development.

Applied behavior analysis. The data indicated that knowledge of the wide range of behavioral practices associated with ABA is necessary for effective group instruction with students with ASD. Although there was evidence that all of the teachers had some knowledge in this area, their effectiveness during group instruction seemed to vary as a function of their ability to utilize a variety of ABA strategies when the situation dictated a
need. Professional development to build teachers' understanding and utilization of a wide range of ABA strategies was also seen as a need by this researcher.

**DTT.** As DTT is an instructional strategy primarily for the acquisition of a skill or skill sequence, it is imperative that teachers have knowledge of this technique. The ABA/DTT training that these teachers participated in built the basis for generalized use of this strategy. However, prompting and delivery of contingent feedback during group instruction were identified as deficient and in need of further improvement. For effective group instruction, teachers needed to be able to use the full range of DTT formats to match the many demands of group instruction. Fluid movement between formats and random rotation within the sequential formats was noted as a means by which a few of the teachers maintained high levels of student attention and engagement. The data indicated a need to improve teachers' ability to use random rotation within the sequential format as well as between the three DTT formats. The data also indicated that teachers in this study were underutilizing the overlapping format, thereby missing opportunities to maintain engagement as well as infuse social interaction between students.

**Generalization.** During group instruction, activities were occurring that promoted generalization in some areas; however, it was not consistent. As the basic principles promoting generalization were not evident throughout the group instruction observed, this researcher believes that these teachers lacked a comprehensive understanding of how to promote generalization. Specifically, knowledge of the strategies that facilitate generalization and how to fully incorporate those concepts into the context of group instruction is required.
Noninferential assessment/data collection. The lack of any consistent noninferential assessment and data collection during group instruction is a significant gap between optimal and actual performance. The teacher participants clearly had knowledge that this should be occurring based on their comments; however, they openly acknowledged that they had insufficient training on how to go about it. Even those teachers who were taking data in their classrooms did not seem to have a process for assessing the data and using it to guide instruction. Instruction in systematic methods of noninferential assessment and data collection; as well as, guided practice in the application of these methods was seen as necessary to overcome the teachers’ current beliefs and attitudes regarding this area.

Planning Group Instruction

Although all of the teacher participants engaged in planning, only one actually planned circle time to target very specific needs of each of the students in the class. The data revealed that teachers were often not tying their group instruction to coincide with specific IEP goals and objectives of the individual children; rather, they were using standard activities associated with circle time that targeted generic skill deficits. This suggests that there was a lack of understanding of (a) how instruction on a wide variety of skills across domains can be integrated into group instruction and (b) the benefits derived from the use of these procedures. This researcher feels that this resulted in an underutilization of the group instructional format.

Summary. This study suggests that knowledge and associated skills in these three areas (a) child development/primary academic curriculum, (b) applied behavior analysis,
and (c) planning group instruction was pivotal in developing and implementing effective ABA based group instruction. Although there are identified components within each area that are essential for further professional development, it is important to note that teacher performance hinged on this knowledge being interwoven. Professional development needs to provide not only an understanding of the concepts and skills in each of the above areas, but also, an understanding of how and where the interface exists between them.
CHAPTER V

Discussion

*Individual Case Study Analyses*

Data derived from the individual case studies made it possible to examine the actual practices of the teacher participants through the lenses of their felt and expressed needs. The participants openly shared their thoughts and feelings. The information they shared during the structured interview provided details of their attitudes, beliefs, and practices that could not be obtained through observation alone. Triangulation of these data with those obtained during the observation helped to identify underlying knowledge and skill deficits; as well as, contextual difficulties that each participant experienced. This process provided insight into the professional development needs of each participant; as well as larger contextual issues that affected their job performance.

*Teacher A*

It is interesting to note that Teacher A did achieve a rate of 80% on engagement during the observation, even though the mean on the first four instructional components (instruction, prompt, feedback, and curriculum) was only 52%. The children appeared to be very familiar with the activities that were used during the circle time and most of the children demonstrated mastery of much of the content. This lends support to the idea that children with ASD demonstrate relatively high levels of participation in well known and/or preferred activities. It also suggests that once children with ASD have learned activities they may not require precision in the delivery of instruction in those activities.
Although Teacher A had a masters degree in special education and the opportunity to regularly observe a highly skilled teacher directing instruction with students with ASD for approximately 4 months, she had not acquired the underlying knowledge that supported "recommended practice" in group instruction. She demonstrated a superficial knowledge of what to do; however, she didn't seem to know why. She had motivation to carry out instructional tasks; however, she didn't seem to know what her real mission was. Teacher A's actual skills and practices reflected an incomplete knowledge base in (a) child development, (b) early childhood education and curriculum across domains, (c) ABA principles and procedures, and (d) potential benefits and outcomes associated with group instruction. Although she had many of the pieces, she lacked the picture on the box lid to guide her to successful assembly of the puzzle. In addition, Teacher A displayed the majority of the teacher knowledge deficits that had been generated through the nominal group process. This suggests that the experienced teacher trainers who participated in the nominal group process had experiences regularly with many teachers who shared Teacher A's difficulties.

These data also informs discussions regarding the provision of all professional development through an on-the-job mentoring model. This finding suggests that a core base of knowledge is necessary and that it does not necessarily develop when not provided through a more formal training process. Teacher A did indicate a desire for training and any training materials that were available. She specifically identified the desire to meet regularly with other teachers of similar students to share and discuss what was working for them in their classrooms. This was interesting as she was already
sharing a classroom with a master teacher. It suggests that she felt a broader network of
colleagues to interact with would enhance her knowledge and skills.

*Teacher B*

Teacher B demonstrated excellent technical skills in implementing a variety of
ABA procedures, including DTT. She incorporated that knowledge into a highly
individualized curriculum that addressed her students' learning needs across the
developmental and academic domains. The data indicated that throughout the school
day, she incorporated instruction that targeted the core deficits of ASD, communication,
language, and social interactions. Although she did not maximize the opportunity to
infuse this instruction throughout the observed circle time, the data indicated that she did
incorporate this instruction throughout the day in other group activities. The emphasis on
the inclusion of social communication and interaction skills, as well as, group behavioral
expectations in her instruction demonstrated a deep understanding of her students' most
significant challenges. Her teaching was consistent with her stated belief that her job was
to prepare her students for successful general education experiences.

Although Teacher B was skilled in using ABA procedures, she demonstrated a
need to strengthen her core knowledge regarding the ABA principles of noninferential
assessment and frequent data collection that are used formatively to guide instruction.
She recognized the need to increase her knowledge of data collection; however, it was
not clear if she understood the underlying reason for data collection. It was unclear
whether she understood the link between taking the data, assessing the data, and making
decisions regarding instructional procedures and curriculum.
In contrast to Teacher B, the paraprofessionals in her classroom exhibited extremely low scores in prompting and providing feedback to the students during the observed circle time. This corroborated her beliefs that her staff needed more training in these skills. This also suggests that although Teacher B was highly skilled in teaching her students, she had not been able to teach her paraprofessionals the skills they needed. Teacher B was attempting to provide direction to her paraprofessional staff through the use of a visual support that was placed on the wall by each student's independent work area that provided information on curriculum and behavior management. It was clear that she knew there was a need to communicate this type of information to her staff. However, it was also clear that Teacher B's efforts had not resulted in adequate skill development in her paraprofessionals. Additional training of the paraprofessionals was clearly a need in this classroom.

Teacher C

Again there was a contrast between the skills of Teacher C and those of her paraprofessional and support staff. Although Teacher C clearly had an excellent command of DTT, she lacked knowledge and skill in using a full range of ABA strategies that support group instruction. The students' engagement was impacted by her failure to incorporate strategies that help support students' attention (a) random rotation across students, (b) the use of overlapping trial formats, (c) random reinforcement to students' for appropriate behavior. Overall she did not demonstrate a comprehensive understanding of ABA principles and procedures during the observation. None of her staff demonstrated skill in supporting group instruction by providing appropriate levels of
prompting or feedback to the students during her instruction. Here again, the lack of skilled paraprofessionals impacted the instruction and they clearly demonstrated a need for further training as well.

Teacher C had wonderful, developmentally appropriate activities during her circle, but failed to incorporate social and communication instruction. She had expressed a belief that group instruction facilitated these skills; however, it seems that she was unaware of the directive role that she needed to play in the process. This also suggests a lack of understanding of the instructional scope and sequence required to address these deficits.

Her desire to have professional development delivered in a mentoring format may have been affected by the difficulties she experienced in accessing other traditional in-service training opportunities. Reasons that she had not attended very much training included (a) having a large number of students with severe disabilities and lacking experienced substitutes and (b) training was not available in her local community as she lived and taught in an outlying rural area. To attend, she incurred expensive gasoline costs and was required to leave home extremely early in the morning to reach the training sites. Also, she felt she benefited most from her opportunities to observe and work with a master teacher. This lends supports to the provision of professional development through a mentoring program.

Teacher D

Teacher D was another positive and well-educated teacher with a strong background in child development and early childhood education. However, her ABA and
DTT training had not resulted in adequate understanding or skill development. She had well designed, developmentally appropriate activities during circle time; however, she provided feedback consistently only when the students were correct. She expressed some discomfort with the directive style of DTT although she was using it. Her difficulties seemed to be both a lack of knowledge of how to implement DTT within the context of a group as well as a lack of understanding of the comprehensive principles of ABA. The rate of engagement suffered as a result of these difficulties averaging only 60% during circle time.

Working in a rural outlying area, she also faced challenges in accessing professional development. She found it expensive and extremely time consuming to attend trainings that were far from her school. Her solution to gaining the knowledge that she felt she needed was to have a mentor provide modeling and feedback to her over time. Although she did not have difficulty arranging for a substitute teacher, the other issues minimized the amount of professional development activity that she was willing to engage in that was not provided locally.

Although she had extensive early childhood training and experience, she had not gained a firm grasp of the scope and sequence of social interaction curriculum. She obviously valued the need to development appropriate social behaviors; however, she did not provide the instructional opportunities to do so. Her desire to have the skilled speech pathologist assist with group rather than having paraprofessional support due to their skill deficits supports the need for both (a) improvements in paraprofessionals skills levels and
(b) additional professional development to improve teachers' abilities to train and manage their paraprofessional staff.

Teacher E

Teacher E was an incredible skilled teacher who delivered highly individualized and technically precise instruction during circle time. She also did not demonstrate that she completely understood the principles of ABA; however, she did recognize that she needed to improve her assessment and data collection knowledge that were the areas in which her knowledge base appeared weak. Her teaching behaviors corresponded to her spoken beliefs of preparing her students for successful mainstreaming experiences. She also lacked the scope and sequence of social interaction behaviors. Although her intentions were clear in this regard, she failed to provide the instructional opportunities to directly teach this social interaction and communication curriculum.

Accessing professional development opportunities and increasing the skills of her paraprofessional staff were important to her. She also commented on the desire to have opportunities to engage with teachers teaching similar students to enhance her knowledge base. She had made attempts to improve her paraprofessionals skills; however, she felt that she was relatively unsuccessful in closing the gap between their actual performance and her expectations for their performance. Although she employed some management strategies, such as holding meetings at the end of school daily with her staff, she felt that there was insufficient time to do the training required. The need for professional development to enhance her ability to manage and train her staff were clear from the data.
Cross Case Analysis

As expected, there were differences in each case study. Differences were noted in the teacher participants' (a) preservice education, (b) teaching experiences, and (c) types and extent of ASD specific training. From the data available, the specific elements of training and experience that resulted in higher levels of teacher competencies in conducting group instruction with students with ASD was unclear. Within the case studies, there were differences between the teachers' perceptions about their group instruction and their actual practices observed during their group instruction.

Additionally, there were substantial differences in the beliefs and actual practices of the kindergarten to grade 2 teachers as compared to the preschool teachers. The kindergarten to grade 2 teachers devised more opportunities for social interaction with general education peers and incorporated (a) higher rates of individualized activities and (b) teacher expectations during group instruction that replicated those commonly seen in general education. The preschool teachers used developmentally appropriate curriculum; however, they demonstrated very low rates of individualization and did not report placing a priority on social integration with typically developing peers. The teacher that was located on the premises of a private community preschool did join the other classes with typically developing preschoolers for outdoor playtime, lunches, and special activities. However, she did not comment on those opportunities; rather, she reflected on the importance of her student with autism being a part of his special education class and fully participating in all activities with his classmates.
The kindergarten through grade 2 teachers had developed a comprehensive view of the benefits of group instruction. They demonstrated an understanding of the importance of observational learning and included instructional opportunities within their circle time. They also recognized that group participation occurs frequently in many educational environments and that general education teachers have an established set of expectations during group instruction. Preparing their students with ASD to appropriately participate in the variety of group activities that they may experience in general education was seen as a priority for these two special education teachers.

Social awareness and tolerance of peers' proximity seemed to be of greater importance to the preschool teachers. They commented on the importance of observational learning; however they were not observed creating instructional opportunities for their students to learn these skills. Although these differences could be attributed to the different developmental levels of the students in the preschool versus the early education classes, to do so may overlook a possible lack of awareness and curriculum knowledge on the part of these preschool teachers. This study did not identify the factors contributing to the dramatic difference in the amount of individualization by the early education teachers as compared to the preschool teachers.

Within each case, the participants perceived group instruction with students with ASD to be challenging. A common belief of the participants was that they did not yet have adequate knowledge and skills to effectively meet the challenge without further professional development. The teacher's accurately identified many of their specific professional development content needs (e.g., knowledge of child development, data
collection, behavior management strategies, assessment). Each teacher was asked to think about and describe professional development opportunities that they felt would be of benefit to them. They stated that they would benefit from an ongoing professional relationship with other teachers or mentors who taught students similar to theirs. Many also believed that observing a master teacher and having a mentor observe them and provide constructive feedback would be helpful. It was interesting to this researcher that although they named specific areas in which they believed their knowledge base and abilities were weak, they did not indicate that a formal training program on those topics would be of benefit; rather, they indicated a need for a mentor. This suggests that it may not be the basic content that they felt was difficult to acquire; but, the insight and skill to integrate the knowledge into their practice that was perceived as most difficult.

One common theme in each case study was a perceived difficulty in maintaining students' attention and engagement during group instruction. The teachers were not insightful into how their teaching practices supported or deterred students' attention and engagement. They each commented on their students' (a) short attention spans, (b) disruptive behaviors, and (c) fluctuations in motivation during group instruction. They did not indicate a possible need for additional teaching strategies or changes in their practice to improve these factors. Although they indicated that they found these behaviors interfered with students' learning, they seemed resigned to accept them and to work around them rather than reflect on how they might influence them through changes in their instructional practices.
The observations revealed that participants varied in their actual ability to maintain students' attention and engagement. During the observation, it was apparent to this researcher that those teachers who were successful in maintaining their students' attention and engagement were engaged in a complex and demanding instructional interaction. These teachers juggled (a) the delivery of a variety of ABA based techniques, (b) varied formats of discrete trials, (c) curriculum, and (d) individualization of instruction with finesse and artistry.

Another common theme within each case was the negative impact that inadequately skilled paraprofessionals had on the effectiveness of group instruction. Skilled paraprofessionals were observed supporting instruction in these classrooms; however, they were the exception and not the rule. The impact of their effective support, or the lack of it, was evident in these classrooms. All but one of the teachers felt concerned about the impact their paraprofessionals were having on group instruction. They experienced frustration in trying to train and manage staff at the same time they were trying to teach their students.

Skill or knowledge deficiencies were identified in the data as having the most significant impact on the effective delivery of group instruction to the students with ASD. Few items of concern were identified in the other two performance problem categories of (a) incentive or motivational deficiencies and (b) environmental constraints. The three that had the most impact on the teachers' effectiveness in conducting group instruction were: (a) paraprofessionals lack of adequate knowledge and skill in ABA methodology, (b) inadequate planning time, and (c) availability of and access to training opportunities.
As these three factors reduced the teachers' effectiveness, it is important that administrative solutions be sought to improve these environmental factors.

The need for additional training for a majority of the paraprofessionals supporting group instruction was both an environmental constraint and a skill/knowledge issue. The teacher participants clearly did not have the time or resources to fully train their classroom staff. Funding and initiatives to insure that paraprofessionals entering these classes were adequately skilled would require administrative actions. However even with adequately prepared paraprofessional staff, the teacher participants in this study were struggling with their supervision. The data revealed a lack of supervision tools being employed in the classrooms. The need for formal staff scheduling and instructional charts and other management tools to provide more specific direction to the paraprofessionals was evident. Although professional development on supervision of paraprofessionals alone would not eliminate this issue, it may reduce the stress and frustration that the teachers were experiencing due to this situation.

The teachers' expressed concerns regarding the adequacy of their knowledge and skills. The observations and results of the nominal group process supported their belief that an ongoing professional development program was indicated. The observation data indicated that teachers only met criteria on the instructional components a mere 48% to 75% overall. The nominal group process revealed twenty specific difficulties experienced by teachers that were believed to impact their delivery of "recommended practice" group instruction that could be ameliorated through professional development. All of these difficulties were identified in at least one of the cases in this study, with most
of them occurring across several or all of the cases. The two that were prioritized by the

*teacher trainers participating in this process were* a) the lack of embedding of

individualized IEP objectives into the group activities and b) the lack of social skills

instruction and peer interaction embedded into the group activities. Of these two, the

only one that appeared in all cases was the lack of adequate social interaction

instructional opportunities during group.

The lack of comprehensive knowledge regarding the full range of ABA practices

was also evident. Since the instructional benefits to be derived from the use of ABA

principles and procedures are empirically based, it seems imperative that teachers of

students with ASD have a comprehensive knowledge and skill base in these methods.

Although the teacher participants taught using a systematic antecedent-response­

consequence cycle, they still demonstrated deficits in implementing discrete trials.

Overall they failed to meet all of the criteria identified by Green (2001) for their group

instruction to be in compliance with the principles of ABA. Lacking was evidence of the

teachers' ongoing use of (a) noninferential assessment, (b) frequent collection of

observational data, and (c) assessing data and making adjustments in instructional

procedures when the data indicates that adequate progress is not being made.

It is important to note that prior research or current data are not available to define

the level of skill mastery or generalized implementation of ABA methods of any teachers

who have attended the State of Hawaii sponsored intensive ABA/DTT trainings. Also,

current data are not available to indicate the degree of competence that the teacher

participants in this study demonstrate in their implementation of ABA/DTT techniques
during individual instruction in their classrooms. However, it was apparent that the intensive training that the special education teachers had received in ABA and one-to-one DTT had not resulted in their full implementation of ABA methods. But, it had resulted in consistent use of DTT. However, the teacher participants still lacked skill in employing all three formats of DTT (sequential, choral, overlapping) during group instruction resulting in reduced engagement rates. Further professional development in all elements of providing group DTT seem indicated.

The lack of ongoing noninferential assessment and data collection procedures impacted the teachers' ability to develop an appropriate instructional plan for group instruction. These ABA principles provide teachers with critical information that can be used in a systematic planning process for group instruction. All of the teacher participants expressed difficulties associated with the diversity of their students' developmental levels and abilities. It was apparent that the preschool teachers had specific objectives that they incorporated into their activities; however, it did not appear that they were planning group instruction specifically to target their students' individual objectives. Nor did it appear, in many cases, that adaptations had been developed for the group activities that provided opportunity for successful participation for all of the students. Implementing a systematic, data-based planning process appears to be an important first step in a teachers' ability to deliver individualized, appropriately sequenced instruction for each student during group instruction.
Limitations of the Study

Limitations of this study include issues of internal and external validity. The external validity of this study is an issue as the case study method does not include a random sample and therefore cannot be generalized to a population. However, to strengthen the robustness of the results, this researcher conducted a multiple case study of five individual cases. This allows for an analytical generalization of the results through replication (Cowley et al., 2000). Additionally the teacher participants were all currently employed in preschool or kindergarten to grade 2 settings. The students in these classrooms ranged from 3 to 7 years old representing only the early childhood portion of the special education continuum.

The analysis of this case study relied on inferences made by the researcher. The use of multiple methods of data collection that cast a "wide net" to gather relevant evidence for analysis and triangulation of the data were useful in reducing bias (Bromley, 1986, p. 23). Although multiple sources of data, qualitative and quantitative, were used, there was only one observation and one structured interview conducted with each teacher participant. Although each teacher confirmed that the observed group instruction session was "typical," data were only collected and analyzed from the single observation. Also, the observation checklist developed for use in this study had not been validated through prior research. It was developed using a systematic process although it was not subjected to further assessment for reliability and validity. The process for its' development did include input and review of the elements by experts in the field. This study would have
been strengthened by data on the teachers' competencies in the use of ABA based interventions, including DTT, with individual children.

The use of audiotapes during the interviews and videotapes of the group instruction sessions with subsequent inter-observer checks for their analysis also provided some protection against researcher bias. The use of (a) an observation protocol and (b) a questionnaire to guide the structured interview provided consistency among the individual cases and also provides other investigators with the tools to replicate the study.

Implications for Practice

Environmental Constraints

Because there were several environmental constraints that impacted teachers' ability to deliver effective ABA-based group instruction with students with ASD, it appears that school systems would be prudent to take action to reduce the impact of these constraints. Administrative actions that would reduce their impact are: (a) ensure that teachers of students with ASD have adequate planning time, (b) ensure that paraprofessionals assigned to classes serving students with ASD have basic ABA competencies, and (c) provide ASD specific training and facilitate access to training.

Planning time. Effective group instruction demands that teachers' plan for each student's (a) receptive and expressive communication level, (b) appropriate instructional level, (c) individualized goals and objectives, (d) appropriate prompting level, (e) adequate frequency and type of reinforcement, (f) integration of social interaction skills, and (g) peer communication opportunities. This is a complex task requiring analysis of each student's current performance data and curriculum across all domains that may be
targeted during the instruction. For these teachers, there was inadequate time for effective planning within the demands of their current workday. Beyond the time required to do adequate planning is the need to communicate with their paraprofessionals so that their prompting and feedback are appropriately individualized for the children that they will be assisting. Administratively, additional time might be provided by: (a) relieving these teachers of other supervision duties, (e.g., recess yard duty) and (b) providing a substitute for regularly scheduled data analysis and planning periods.

**Basic ABA competencies for paraprofessionals.** Effective group instruction for students with ASD requires that paraprofessionals respond to students' behavioral responses with minimal teacher direction during the instructional session. Minimally, they must provide appropriate prompting and feedback to the students; however, to assist the teacher when disruptive behaviors do occur they need a much broader array of strategies. They need a basic understanding of the principles of operant conditioning and skill in implementing a variety of ABA procedures in collaboration with the teacher.

These competencies are necessary for paraprofessionals assisting students with ASD; however, these principles and strategies are appropriate for use with all students. Therefore, assessments to determine whether paraprofessionals have the requisite knowledge and skill in implementation of ABA based interventions should be given as part of the hiring process. Placement on the initial salary schedule and advancement possibilities might be tied to satisfactory completion of an ABA competency assessment. ABA professional development programs delivered through community colleges, adult schools, and/or the local Department of Education could be offered with a final certifying
exam. Ensuring that paraprofessionals have the necessary skills to provide effective services is an administrative responsibility. Certification in ABA interventions prior to placement in programs serving students with ASD or other behavioral challenges would be of tremendous assistance to teachers and may result in improved student outcomes.

*Availability and facilitation of access to ASD training.* The data indicates a need for ongoing professional development for these teachers; however, teachers report difficulty accessing training that is provided. Administrative actions to build a pool of substitutes that are capable of providing appropriate services to these students are necessary. In addition, training needs to be brought to the rural and outlying areas whenever possible. Teachers may need financial support to cover the expenses of long drives and child care (for those who have families) associated with attending training in other areas.

Support networks that provide contact via the internet are another means of providing additional professional development opportunities that would be particularly helpful for teachers in rural and outlying areas. *Teachers in this study believed that establishing a collegial support network for teachers serving similar students and providing experienced ASD mentors would improve their ability to conduct effective group instruction with students with ASD.*

*Preservice Education*

The identification of special education teachers' professional development needs also has implications for preservice education programs. Is it possible that we are not adequately preparing new teachers to meet the challenge of teaching students with ASD?
The findings from this study suggest that preservice education programs may need to evaluate if they are incorporating the identified content in their programs and, if so, determine if they can increase the necessary competencies of new teachers to face this complex and demanding task.

This study has identified numerous skill and knowledge deficits in these preschool and early education teachers that require professional development. It has also provided support for the necessity of teachers' serving these students to have comprehensive knowledge of the specific scope and sequence of developmental skills across all domains, particularly social and communication. Even though several of these teacher participants had preservice training in early childhood, they still reported being inadequately prepared to develop instruction to remediate the significant social communication and interactions deficits in their students with ASD.

In addition to knowing the scope and sequence of developmental skills across domains, this study suggests that teachers need to have an increased understanding of the interwoven and interdependent nature of many facets of development. This foundational knowledge would assist them in the development of an individualized curriculum and instructional plan constructed to build a solid developmental and academic base for each student. It would also support their ability to develop appropriate instructional opportunities to enhance generalization of skills throughout the day.

**Professional Development**

Based on the data, opportunities to increase these teachers' (a) understanding of the principles of ABA, (b) comprehensive understanding of generalization, and (c) skills
in the array of ABA procedures are necessary. As group instruction presents additional challenges in maintaining student attention and engagement, specific instruction is required in conducting and managing (a) group discrete trials, (b) materials to support students' ability levels, (c) group reinforcement, (d) individual's reinforcement frequency and type within the group, and (e) differentiated instruction. Teachers need to be familiar with the extant group instruction literature so that they can develop a comprehensive view of how they might employ these strategies with their students with ASD. A solid foundation in the scope and sequence of early childhood development across all domains, with an emphasis on social interactions and peer communication, is also essential if teachers are to construct learning opportunities to address these core deficits of ASD.

Professional development for supervision and management of paraprofessionals is another issue as this was reported as the source of significant frustration. The data indicate a need for training in (a) the use of management tools that facilitate paraprofessionals understanding of their assignments throughout the day and (b) methods of scheduling personnel based on the students' individual needs.

These teachers also lacked a systematic method of planning integrated curriculum and group instruction. It is essential that teachers be trained in effective planning models for group instruction that allow for (a) individualization of curriculum for each student, (b) coordination of paraprofessionals, (c) embedding of IEP goals and objectives, and (d) embedding peer social interaction and communication opportunities across the activities. These planning methods must also take into consideration teachers' time limitations and be efficient and streamlined for ease of use.
Directions for Future Research

Group Instruction

Group instruction provides many instructional opportunities that cannot be duplicated in one-to-one instruction. Increasing our understanding of how to fully exploit this instructional format to enhance students' skill development across domains and generalization of those skills should be of continuing interest to educators. In light of the findings in this study, continued research on comprehensive group instruction approaches that facilitate global improvements in the deficits associated with ASD is certainly warranted. Similar studies with larger samples of preschool and early education teachers may help determine whether or not the patterns generated from this study are unique to its sample or common among teachers of similar students. Additionally, as this research only studied teachers with 3 to 8 year old students, there is a need to explore whether teachers of older students with ASD demonstrate the same professional development needs. Are there differences in the beliefs, attitudes, skills, and practices of teachers teaching older students with ASD? Also, there needs to be further research to determine if there are different group instructional needs that must be met for students with ASD with different functional levels than the students taught in this research.

Another research direction suggested by this study involves models for integration of curriculum and efficient, systematic methods of planning group instruction. The ICS model has provided a basic foundation. The development of models that simplify this complex task would be useful. What simple but effective models are currently in use by
teachers of students with ASD? What are teachers' beliefs and attitudes regarding these group-instruction, planning models?

Additionally, it may be important to identify if the curriculum in preservice special education programs provides the basic knowledge core that has been identified as necessary to support ABA-based group instruction with students with ASD. Do special education preservice programs require courses that deliver the content identified in this study? To what degree do new special education graduates have competency in these areas?

Another area for further research is effective teaching of early social behaviors. Since teachers' knowledge of the comprehensive scope and sequence of social interaction skills was not assessed in this study, it remains a topic requiring further study. This was an area that all of the teachers lacked knowledge about regardless of their formal training background. This suggests a possible need to develop a comprehensive scope and sequence of early social communication and social behavior. This would be useful in guiding teachers' assessment, program planning, and delivery of this curriculum.

Research on how to best infuse this instruction and on the emphasis that should be placed on this curriculum would be of assistance to the field. Additionally, more information on which types of instructional activities best facilitate early social learning in students with ASD would be beneficial.

Professional Development

This study is only a beginning in the identification of professional development curriculum and training approaches that may result in increases in teachers' proficiency in
conducting group instruction with students' with ASD. Further research on specific curricula and professional development activities that enhances teachers' abilities in this area is certainly indicated. Also, research to design professional development programs and delivery formats that target the identified needs is important. Additionally, there is a continuing need to assess whether professional development activities are actually resulting in the anticipated changes in the field. What increases in teachers' proficiencies in the identified skills occur as a result of different professional development activities? This study suggests that it is important to conduct research to develop training that not only increases teachers' understanding of the concepts and skills in each of the identified areas; but that also, provides the understanding of how and where the interface exists between them.

Additionally, evaluation of differences in the beliefs, attitudes, skills, and practices of teachers of students with ASD of all ages may provide relevant information for professional development programs. As there were differences in this study between the preschool teachers' and the early education teachers' beliefs, skills, and practices there may be more significant differences between teachers of older students with ASD. Are different professional development programs indicated based on the ages of students?
CHAPTER VI

Summary

This multiple case study of five early childhood special education teachers teaching 3 to 8 year old students with ASD was conducted as a professional development needs assessment in regard to "recommended" group instruction practices. Three preschool teachers and two kindergarten to grade 2 teachers participated in this study. The educational history and teaching background of the five teacher participants varied widely. Using both quantitative and qualitative methods, this multiple case study investigated the teachers' attitudes, beliefs, skills, and prior knowledge providing insight into the experiences associated with their use of an ABA-based group instruction strategy for students with ASD. Understanding the teachers' feelings toward and perceived difficulties with group instruction for students with ASD was a critical component of this research.

Structured interviews were conducted to gain insight into the teachers' practices, as well as, their felt and/or expressed needs. Teachers' skills and instructional practices were analyzed during a 15-minute videotape segments of actual group instruction taken in their classrooms. Comparative need was assessed by a comparison of actual performance to "recommended practices" outlined on the observation checklist. For this research, "recommended practice" and normative needs were identified through the literature review and the nominal group process conducted with five autism consultation teachers. A within-case analysis was conducted for each individual case study. Final
conclusions were based on the entirety of quantitative and qualitative information derived through analysis of the individual cases, as well as in a cross-case comparison.

Using pattern matching, the teachers' current beliefs, attitudes, skills, and practices regarding group instruction created six broad categories. These were: (a) purpose of group instruction, (b) personal competency, (c) paraprofessional staffing, (d) range of developmental levels and abilities within the group, (e) planning and developing group instruction lessons, and (f) assessing students' needs and performance. Within each case, the participants perceived group instruction with students with ASD to be a challenge. Across all cases concerns were expressed regarding the adequacy of their knowledge and skills in teaching students with ASD, in general, as well as within group instruction formats. Also, planning and instructional delivery were definitely complicated by the range of development levels and abilities within the group.

The data revealed that during group instruction, the teachers were not adequately employing most of the elements that were considered necessary for an educational intervention to be considered under the ABA umbrella. Teachers' felt data collection was difficult and expressed a need for more training in this area. The findings revealed that noninferential assessment and data driven instructional planning was not occurring for group instruction. All participants used DTT effectively; however, the preschool teachers failed to individualize adequately. Knowledge of the scope and sequence of early social behavior and instructional activities to support its' development was also identified as deficient.
Environmental constraints impacting teachers' delivery of effective group instruction were (a) inadequate planning time and (b) the lack of skillful, well-trained paraprofessionals. Teachers expressed a preference for mentoring as a means of increasing their professional expertise. However, the study suggests that mentoring alone without a formal process for ensuring that the necessary core knowledge of child development, primary academic curriculum, and comprehensive knowledge of ABA principles and procedures may not result in the necessary skills to develop and implement effective group instruction with students with ASD that targets their deficits across the developmental domains.
Group Instruction Methods for Students with Autism Spectrum Disorders: Identifying Special Educators' Needs for Professional Development

Interview Questions and Protocol

This study is a requirement for my Ph.D. in Education. Thank you for your willingness to participate.

I will begin the interview with questions about your education and your special education experiences. Next, the questions will be specific to your current experiences in conducting group instruction. It's okay if you choose to not respond to any of the questions, feel free to pass. If you need clarification on any question, please ask. Also, if you want to ask any questions during the interview, go right ahead.

I would like to tape-record this interview so that I can get an accurate record of your responses. Also, if I don't have to record your responses in writing during the interview, I can concentrate better on what you are saying. This interview will be confidential and you may ask me to turn off the tape-recorder for any portion of the interview. Is that okay with you if I tape record the interview?

Do you have any questions before we begin? Would you please complete this form with your name, gender, age, and ethnicity, so that I can collect some personal identification data for the study?

Education:

1. What degrees do you hold?

2. What college coursework (undergraduate or graduate) have you taken that was autism (ASD) specific?

Experience:

3. How many years have you been teaching in total? How many in Special Education?

4. How many years have you taught students with ASD?

5. Describe your current teaching assignment, such as number of students and their educational arrangements?

6. Describe your previous teaching assignments?
Professional Development:

7. What specific ASD related training have you had? I'd like you to include the name of the instructor, the number of hours of the training, the dates and content covered for each one.

Use of Group Instruction:

8. When do you use a group instruction format during the day?

9. Do you enjoy conducting group instruction sessions? Explain.

10. Do you feel that group instruction is important for your students? Are there specific skills or developmental areas that you feel are best addressed through group instruction?

11. Do you feel that your students benefit from group instruction?

12. Are you familiar with any research literature that supports the use of group instruction with students with ASD?

13. Do you have specific educational objectives for the children during each group activity? Can you give some examples?

14. How do you select the activities that you use during group instruction?

15. How much time do you spend planning your group instruction sessions?

16. Do you use the children's IEP goals and objectives in planning group instruction? Can you give some examples.

17. Are any related services staff ever involved in your group instruction activities? Describe their involvement? Are they supportive of group instruction? If so, how?

18. What do you find difficult about conducting group instruction with ASD students?

19. Do you have an adequate number of support staff during group instruction? Do they have adequate training?

20. What types of difficulties, if any, do you experience with your support staff in regard to group instruction?
21. Describe your methods of assessment and data collection of students' progress in group instruction activities?

22. Have your students' parents ever expressed any objections or concerns regarding the use of group instruction strategies with their children?

23. Do you ever include students who are not assigned to this class in any of your group instruction sessions?

24. What types of training or professional development materials or activities do you feel would help you improve the quality of your group instruction with children with ASD?

25. Are there other administrative supports that you feel would be helpful?
AGREEMENT TO PARTICIPATE IN
Group Instruction Methods for Students with Autism Spectrum Disorders:
Identifying Special Educators’ Needs for Professional Development

Jenny C. Wells/Mary Jo Noonan, University of Hawaii,
Department of Special Education.
1776 University Avenue, Honolulu, HI 96822 (808) 956-7956
(Principal Investigator’s name, address, and phone number)

Project Description:
1. The purpose of this project is to investigate the professional development needs of special educators regarding group instruction for students with autism spectrum disorders (ASD). One 15-minute segment of a teacher-directed group circle time activity will be videotaped in the classroom of participating teachers. The researcher will conduct one structured interview with each participant using a questionnaire regarding group instruction practices and professional development needs. The interview responses and videotapes will be analyzed to develop an understanding of teachers’ beliefs and practices regarding group instruction.

2. Participants’ rights to confidentiality will be maintained. Any written results of this research will not disclose the names of the teachers, their school, classroom staff, children, or their parents.

3. Videos and interview responses will be maintained by the researcher in a secure file. The anonymity of participants will be maintained via code numbers and protected files.

4. This project provides the participants an opportunity to participate in the development of a professional development program that will meet their needs. The study will result in recommendations that incorporate their information.

********************************************************************************
I certify that I have read and that I understand the foregoing, that I have been given satisfactory answers to my inquiries concerning project procedures and other matters and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time without prejudice.

Participant’s Signature ____________________________ Date ________________

(If you cannot obtain satisfactory answers to your questions or have comments or complaints about your treatment in this study, contact: Committee on Human Studies, University of Hawaii, 2540 Maile Way, Honolulu, Hawaii 96822. Phone: (808) 956-5007.)

Cc: copy to participant
Dear Parent/Guardian:

Your child's teacher has agreed to participate in a research study designed to investigate the professional development needs of special education teachers who are providing group instruction. This study provides the participants an opportunity to participate in the development of a professional development program that is relevant to their teaching experiences.

In order to develop an understanding of teachers' practices regarding group instruction, one 15-minute segment of a teacher-directed group circle time activity will be videotaped in the classroom of participating teachers.

In the course of taping, although the primary focus of the videotapes is on the teacher's instruction, students in the classroom, including your child, may appear on the videotape. The children's performance is not being evaluated in this study and last names will not be used during the videotaping.

Participants' rights to confidentiality will be maintained. Any written results of this research will not disclose the names of the teachers, their school, classroom staff, children, or their parents.

Videos will be maintained by the researcher in a secure file and will only be used to gather information relevant to this research study.

Student name: ___________________________________________ Teacher: ___________________________________________

I am the parent/legal guardian of the child named above. I certify that I have read and that I understand the information above regarding the videotaping that will be occurring in my child's classroom.

☐ I DO give permission to you to include my child's image on videotape as he or she participates in group instruction conducted at ____________________________ by _____________________________. (Name of School)

☐ I DO NOT give permission to you to include my child's image on videotape.

Signature of Parent or Guardian: ____________________________ Date: ______________
### Instructional Components - Group Discrete Trial

**Instructional Components Description**

<table>
<thead>
<tr>
<th>Instructional Components Description</th>
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<td>Instructions:</td>
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<td>1. Given once, no repetition</td>
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<td>2. Clear (not too wordy, appropriate for task)</td>
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<td>3. Teaching materials ready and organized (no unnecessary delays)</td>
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<td>4. No reliance on artificial cues (fast pace, calling students' names, &quot;ready?&quot;)</td>
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<td>5. Engaging and enthusiastic (not over the top or flat)</td>
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<td>1. Sequential (random rotating between children)</td>
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<td>2. Choral (students respond together)</td>
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<td>3. Overlapping (opening trial for a student while trial still open for another child)</td>
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<td>1. Individualized for each child</td>
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<td>2. Age appropriate</td>
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<td>Social/Communication:</td>
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<td>1. Incorporated social interactions between/among students</td>
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<td>2. Incorporated social communication between/among students</td>
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<td>1. Teacher prompted appropriately (least intrusive, with instruction)</td>
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<td>2. Aide(s) prompted appropriately (least intrusive, with instruction)</td>
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<td>1. Teacher provided feedback appropriately (contingent, timely, frequency)</td>
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<td>1. Children are attending and engaged (looking at teacher and/or materials, in group)</td>
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References


