TEACHING PRESCHOOL CHILDREN WITH DEVELOPMENTAL DELAYS CRITICAL CONCEPTS IN FIRE SAFETY: A SOCIOCULTURAL APPROACH

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CHAPTER I

INTRODUCTION

In 2001 the President's Commission on Special Education was charged with the goal of recommending policies to improve the educational performance of students with disabilities (Wolery & Bailey, 2002). Wolery and Bailey were asked to submit a report on the topic of research in early childhood special education. Embedded in their written testimony is a recommendation which strongly influenced this thesis. The researchers stated the need for studies on the effectiveness of differing models of treatment. "Questions need to move beyond treatment versus no-treatment to studies identifying superior approaches for providing intervention and determining whether particular types of intervention are more efficacious for children with different types of disabilities" (Wolery & Bailey, 2002, p. 92). In hopes of bridging a portion of this research gap, this study provides an evaluation of a sociocultural approach developed to teach fire safety concepts to preschool children with developmental delays.

Rationale for Safety Skills Instruction

A key finding in Collins, Wolery, and Gast's (1991) survey of safety concerns for individuals with disabilities is that some safety skills span across development and that particular components of such skills are best taught at early ages (Bevill & Gast, 1998). This finding indicates the longitudinal nature of safety skills and the need to provide safety instruction in early childhood education. Early training provides students the opportunity to comprehend basic safety concepts in hopes of making more complex discriminations as students mature (Bevill & Gast).

Focus on Fire Safety

Of those studies reviewed by Bevill and Gast (1998) related to young children, the overwhelming focus was on avoiding the lures of strangers or prevention of sexual abuse. Bevill and Gast did not locate any published studies which investigated safety skills education related to fire safety and preschool children. However, the high incidence of fire related injuries and deaths of children in the United States is sobering. Children account for 15% to 20% of fire deaths and 14% of fire injuries (United States Fire Administration, 2005). Younger children tend to be the most vulnerable; in 2002, 56% of all child fire deaths were children under the age five and 80% were under age ten (United States Fire Administration, 2005). According to the National Fire Incident Reporting System (United States Fire Administration, 2002), persons with impaired physical and cognitive abilities, particularly the elderly and the very young, are more susceptible to death and injury from fire than other groups. While a number of resources are available and utilized for fire safety education, no empirical studies were found exploring the effectiveness of the interventions used to teach fire safety concepts to preschoolers. Believing that early instruction is critical in achieving long-term understanding and application of safety skills, this study will seek to validate the use of a sociocultural approach to teach fire safety concepts to preschoolers with developmental delays.

Research Question

Will reflective dialogue increase the understanding of fire safety concepts by preschoolers who have developmental delays?

*Definition*s

Classwide peer tutoring was described as a "highly structured instructional procedure that incorporates high levels of practice within the content to be taught" (Utley et al., p. 3). This teaching method involves careful planning of instruction and active participation of all students in making academic responses (Utley et al.).

Constant time delay was described as "initial trials with simultaneous presentation of the task stimuli and controlling prompt. In all subsequent trials presentation of the task stimuli is followed by a delay for a specified time interval of the controlling prompt," (Alig-Cybriwsky et. al, p. 99).

In this study, subjects who were categorized as having a **developmental delay** were described by their school psychologist as: a preschool child (three to six years of age) meeting any one or more of the four eligibility criteria:

- functioning two standard deviations below the mean in one domain; or
- a 50 percent delay in developmental age functioning in one domain; or
- functioning 1.5 standard deviations below the mean in two domains; or
- a 25 percent delay in developmental age functioning in two domains.

(Oklahoma State Department of Education, n.d.) The school psychologists who assessed children for this study used the Battelle Developmental Inventory-Second Edition (Newborg, J., Stock, J. R., Wnek, L., Guidubaldi, J., & Svinicki, J., 2002) as the instrument of choice for their school district.

Intermental and intramental refer to the origins of individual mental functioning. Intermental (between people) interaction becomes intramental (within people) interaction. Thus cognitive activities such as, thinking, remembering, and

attending were originally carried out between two persons. Intramental processes do not mimic intermental ones wholly; rather, intermental processes are transformed in the internalization process (Vygotsky, 1978).

Reflective dialogue includes the capacity to reflect on one's thinking and learning and to organize decisions and actions as a result of this process (Cullen, 1995). For the purpose of this study, reflective dialogue was measured by preschool children's participation in verbal or signed conversation during daily group time about their learning of the fire safety concepts presented.

Scaffolding is the gradual release of assistance on the part of the teacher or more skilled peer when modeling or explaining a new task. Scaffolding facilitates children's development of increasingly complex thinking abilities and learning of new information through the (Vygotsky, 1978).

Theoretical Framework

Contemporary safety education has been heavily influenced by behavioral, cognitive, and social learning theories. The majority of the studies explored in the review of the literature utilize the language of these theories with terminology such as stimulus, response, rewards, and target behaviors. However, this study will apply the work of Lev Vygotsky's sociocultural theory of cognitive development. Sociocultural theory has been defined as "an approach that focuses on the institutional, cultural, and historical specificity of mental functioning rather than on universals" (Wertsch, 1990, p. 112). In education, Vygotsky's views are considered by many to be the counterbalance to behaviorism (Gindis, 1999). While it took nearly 50 years for the field of psychology in the United States to shift from the simplistic ideas of behaviorism, Vygotsky moved

quickly from the ideas of artificial stimuli controlling individual behavior to the idea of human activity being mediated by psychological tools of the individual's culture (Kozulin, 1990). Vygotsky proposed that humans utilize these psychological tools (language systems, counting systems, writing, diagrams, maps, works of art) to alter their thinking and to control and organize their behavior (Miller, 2002).

Vygotsky's primary intention was to elucidate the human aspects of behavior and cognition (Kozulin, 1990). The mission of Vygotsky's sociocultural approach to cognition was to denote how human mental functioning manifests and embodies its historical, cultural, and institutional environment (Wertsch, 1990). As a Marxist, he desired to change citizen's thinking from a feudal sense of despair and isolation to a socialistic mentality of self-directed activity and a commitment to the greater social good (Wertsch, 1990). Vygotsky's writings were banned from 1936 to 1956 by the Russian regime under Stalin's rule with few of his writings available in English (Kozulin). Vygotsky's untimely death at the age of 37 combined with the political strife in Russia hampered the expansion of his ideas (Kozulin). Thus, it is worth noting that while Vygotsky is the founder of this conceptual framework Rogoff, Wertsch, Tharp, Gallimore and others have continued to guide thinking in this tradition (Cullen, 1998).

Theoretical Concepts

Sociocultural theory emphasizes the vital role of adults and peers in advancing children's cognitive development (Cullen, 1998). Vygotsky's idea of apprenticeship in social contexts underscores this aspect of the sociocultural model. Students are apprenticed in their cognitive activity when they work side by side with a more knowledgeable peer or adult to accomplish a task. Gradually, students carry out the talk

and actions formerly modeled by others. Thus, conversation and activity that was enacted on the intermental plane are ultimately performed on the intramental plane (Englert & Mariage, 1993). Vygotsky focused on how children co-construct meaning through social interaction, proposing that individuals construct new knowledge as they internalize concepts gained through involvement in social activities (Mahn, 1999). Regarding the social origins of individual mental functioning, Vygotsky wrote,

> Any function in the child's cultural development appears twice, or on two planes. First it appears on the social plane, and then on the psychological plane. First it appears between people as an interpsychological category, and then within the child as an intrapsychological category. This is equally true with regard to voluntary attention, logical memory, the formation of concepts, and the development of volition. . . . It goes without saying that internalization transforms the process itself and changes structures and functions (1981, p. 163).

A second primary characteristic of contemporary sociocultural perspectives is that the environment is more than the mediator of learning; rather learning is embedded in both social and physical contexts (Vygotsky, 1993). Within the classroom, students must have opportunities to participate in "ways of knowing" specific to individual subject matter (Englert & Mariage, 2003). In regards to safety instruction, it is not sufficient to "tell students about fire safety" but teachers must involve students in the "practice of fire safety."

A third key component in sociocultural theory is the zone of proximal development, which Vygotsky defined as the distance between a child's "actual developmental level as determined by independent problem solving" and the higher level of "potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). The relation

between an individual's actual and potential development is further described by Vygotsky in the following:

> The zone of proximal development defines those functions that have not yet matured but are in the process of maturation, functions that will mature tomorrow but are currently in an embryonic state. . . . The actual developmental level characterizes mental development retrospectively, while the zone of proximal development characterizes mental development prospectively. (1978, pp. 86-87)

This process of scaffolding further develops abilities which have been emerging, but are not fully mature, and thus uncovers the hidden potential of a child (Gindis, 1999). Vygotsky's work emphasized the reciprocal nature of the scaffolding process which teachers utilize with students. A teacher must provide support by responding to the student's evolving conception of the task with additional cognitive resources, while simultaneously fading back support for other aspects of the task as the student begins to achieve mastery (Englert & Mariage, 2003). Within this study, students were first taught to recognize hot objects. Scaffolding was evident as students were first introduced to such objects as an iron, lit candles, or stove tops through pictures. Students were later asked to name hot objects followed by the question, "what should you do when you see something that is hot?" with the correct response being, "stay away." This approach scaffolds students learning about responding safely to dangerous objects or situations.

Sociocultural Theory Applied to Children in Special Education

Each of these concepts has been applied to children with special needs largely through the understanding of Vygotsky's general sociocultural theory and through Vygotsky's specialized theory (less known outside of Russia), which he called the "theory of disontogenesis" (Gindis, 2003). Vygotsky is the only major theorist who

focused his understanding of cognitive development on both typically developing children and children with disabilities. As early as 1924, Vygotsky began writing about "defect and compensation" and the last public speech he delivered in 1934 was about clinical neuropsychology (Kozulin, 1990). Gindis (2003) clarifies the definition and intent of the word "defectology" stating, "the negative undertone of the term itself is in no way present in the inspiring and positive attitude of Vygotsky's writings" (p. 200). Rather, this term has referred to the study of children with disabilities in Russia for over a century. In 1925, Vygotsky helped establish a laboratory for the study of abnormal child development, which later became known as the Institute of Defectology. Vygotsky served as the scientific director of the Institute up until the time of his death in 1934 (Kozulin). Vygotsky understood the development of children with disabilities is not a sluggish deviation of normal development: "a child whose development is impeded by a defect is not simply a child less developed than his peers but is a child who has developed differently" (Vygotsky, 1993, p. 30). This study endeavors to apply both the concepts and spirit of Vygotsky's sociocultural theory in developing fire safety instruction for preschoolers with developmental delays.

CHAPTER II

REVIEW OF LITERATURE

The literature review encompasses information related to safety skills instruction for young children, with the primary focus on safety education of preschool children with disabilities. In a previous review of the literature on safety skills instruction, Bevill and Gast (1998) were surprised by the scarcity of empirical studies, and even more perplexed by the relatively few studies which included preschool children. For this literature review Bevill and Gast's method of gathering information related to safety skills education for young children was replicated in regard to the electronic search of ERIC and PsycINFO. Keywords used included "safety education," "safety skills," and "safety instruction." Further extraction was made by limiting the results to a 15-year period from 1990 to 2005 and to "young children," "preschool curriculum," "preschool education," or "preschool children." Abstracts were then scrutinized for those studies including children with disabilities, ages three to eight years, and those studies including typically developing children between the ages of three years and six years. Studies which met the above criteria were examined with careful attention given to the training procedures utilized in interventions and research study results. Finally, an explanation of the curricular methodology which was utilized for this study is provided.

Safety Studies including Children with Disabilities

Table 1 provides an overview of safety studies which specifically targeted young children with disabilities. Remarkably, only four studies (Christensen & Lignugaris-Kraft, 1996; Collins & Griffen, 1996; Gast, Collins, Wolery, & Jones, 1993; Utley, Reddy, Delquadri, Greenwood, Mortweet, & Bowman, 2001) have provided

Table 1. Safety Studies including Children with Disabilities

Reference	Participants	Target Skill	Training	Results
Christensen & Lignugaris-Kraft (1996)	6 preschool students 3-5 years old disability: Developmental Delay or Other Health Impaired	first aid skill: seeking adult assistance when injured	instructor modeling peer role play corrective feedback observational learning	all students performed correct response at generalized settings of playground and home at 2, 4, and 8 weeks post intervention
Collins & Griffen (1996)	4 elementary students 8-11 years old disability: MR (2 w/ Down Syndrome)	safe response to potentially dangerous products	*constant time delay	all students performed correct generalized response at final maintenance probe session
Gast, Collins, Wolery, & Jones (1993)	4 preschool students 3-5 years old disability: Developmental Delay (1 child with secondary disability of hearing impaired	safe response to the lures of strangers	*constant time delay	generalization was not achieved until implementation of in vivo training
Utley, Reddy, Delquadri, Greenwood, Mortweet, & Bowman (2001)	5 elementary students 7-9 years old disability: Developmental Disabilities	health education and safety facts (body parts, drugs and their effects, poisons, and dangerous situations)	classwide peer tutoring which included role playing	increases in posttest scores using peer tutoring procedures as compared to traditional teacher-led instructional procedures

*constant time delay: initial trials include simultaneous presentation of task stimuli and controlling prompt. Subsequent trials present task followed by specific time interval delay.

empirical research concerning safety instruction with children ages three years to eight years who have disabilities. Two of these studies (Collins & Griffen, 1996; Gast et al, 1993) utilized Alig-Cybriwsky, Wolery, and Gast's, (1990) "constant time delay" as their training method. Constant time delay was described as "initial trials with simultaneous presentation of the task stimuli and controlling prompt. In all subsequent trials presentation of the task stimuli is followed by a delay for a specified time interval of the controlling prompt," (Alig-Cybriwsky et. al, p. 99). For example, Collins and Griffen's trials technique included the following eight steps: student was presented with the product warning label, followed by a general attention cue, then reinforcement (praise) for attending, a task directive to read the word, a response interval of 5 seconds, another task directive to perform a safe motor response, another 5 second interval to initiate and finally a 15 second interval to complete the motor response. While this type of instruction did result in participants' correct performance of the desired skill; it did not provide opportunities for children to participate in conversational learning aided by adult scaffolding. The constant time delay procedure in Gast and his colleagues' study used similar procedures as Collins and Griffen, however generalization of the target skill (safe response to the lure of strangers) was not achieved until implementation of in vivo training.

Utley and colleagues (2001) trained early elementary students, ages seven to nine years, through classwide peer tutoring and compared the results of their sample to more traditional teacher directed instruction. Classwide peer tutoring was described as a "highly structured instructional procedure that incorporates high levels of practice within the content to be taught" (Utley et al., p. 3). This teaching method involves careful planning of instruction and active participation of all students in making academic

responses (Utley et al.). The results of Utley and colleagues' study did indicate classwide peer tutoring was an effective means of teaching safety skills. However, of the four major instructional components, two methods (written practice of skills and pairing with a non-disabled peer) would be difficult or impossible to implement in a preschool class for children with developmental delays due to most students' delayed writing skills and the absence of typically developing peers within the classroom.

Lastly, Christensen and Linguraris-Kraft (1996) compared the effects of direct training and observational learning of a first-aid skill with three pairs of preschool children with disabilities (three target learners and three observational learners). Simulated cuts and blood were used throughout the experiment since it was not feasible to wait for an actual injury to occur (Christensen & Linguraris-Kraft). The training method for target learners included three stages: (1) instructor model, (2) practice with feedback, and (3) independent test (Christensen & Linguraris-Kraft). The observational learners were told to watch their peers throughout the practice with feedback stage and later were assessed on their skill achievement for the independent test (Christensen & Linguraris-Kraft). Skill acquisition for the target and observational learners was measured by counting the number of steps completed correctly for "seeking adult assistance when injured" (Christensen & Linguraris-Kraft). The acquisition of the first aid skill yielded a chain of behaviors that included six steps: (1) cover the injury with a clean cloth, paper towel, or hand; (2) elevate the injury above the heart; (3) seek an adult; (4) continue to cover the injury while seeking an adult; (5) continue to elevate the injury while seeking an adult; and (6) show or tell an adult about the injury (Christensen & Linguraris-Kraft). The results of this study found observational learners acquired skills in nearly the same number of trials as those students who received direct training.

Through instructor modeling, role play, and corrective feedback all participants attained the target skill and were able to generalize to other settings at two, four, and eight week follow-up probes (Christensen & Linguraris-Kraft).

Safety Studies with Typically Developing Children

As Table 2 illustrates, the safety studies conducted with typically developing preschool children have focused primarily on traffic safety or personal safety skills. Cullen (1995), Tolmie, Thomson, Foot, Whelan, Morrison, and McLaren (2005), and VanSchagen and Rothengatter (1997) focused on teaching road safety skills to young children, ages five to seven years. When VanSchagen and Rothengatter compared roadside behavioral training, classroom instruction, and a combination of these two approaches they found grouping the behavioral training and classroom instruction was the most effective method. Cullen (1995) and Tolmie and colleagues' (2005) research emphasizes the effectiveness of peer and adult scaffolding when teaching road safety skills. In further explaining her previous work, Cullen (1998) acknowledged the influence of both constructivist (Piaget) and sociocultural (Vygotsky) perspectives on the learning of safety concepts stating, "interviews with preschool children highlight the variety of influences that affect children's road safety knowledge and illustrate the interface of constructivist and sociocultural interpretations of learning" (Cullen, 1998, p. 39).

Table 2. Safety Studies with Typically Developing Children

Reference	Participants	Target Skill	Training	Results
Cullen (1995)	88 students enrolled in 5 year old program 3 comparison groups	road safety skills	free play learning center reflective dialogue	children in reflective dialogue group generalized experiences to out-of-school settings without instructor prompts
Himle, Miltenberger, Flessner, & Gatheridge (2004)	8 preschool students 4-5 years old	safety skills to prevent gun play	behavioral skills training	three children performed skills after behavior skills training, five children required supplemental in situ training
Johnson, Miltenberger, Egemo-Helm, Jostad, Flessner, & Gatheridge (2005)	13 preschool students 4-5 years old	abduction-prevention skills	behavioral skills training	five children met criterion level with behavior skills training, 13 children required additional in situ training
Marchand-Martella, Huber, Martella, & Wood (1996)	2 preschoolers age 4	long-term maintenance of abduction-prevention skills	behavioral skills training program	both children maintained skills at seven week follow up, some additional prompts were needed to maintain mastery at 64-week follow up

Table 2 continued . Safety Studies with Typically Developing Children

Tolmie, Thomson, Foot, Whelan, Morrison, & McLaren (2005)	63 students 5-7 years old	pedestrian skills	peer discussion vs adult guidance conditions w/ two groups:1 adult-1child and 1adult-3 children all using *E3 level representation	adult guidance most effective and best results when adult scaffolding was supplemented by peer discussion
VanSchagen & Rothengatter (1997)	89 1st grade students 6-7 years old	traffic safety	three comparison methods: roadside behavioral training, classroom instruction, and combination of these two approaches	knowledge and behavioral improvements seen w/ all three methods; combination of methods slightly more effective
Wurtele (1990)	24 preschool students *M*age=4.2 years	sexual abuse knowledge and personal safety skills	behavioral skills training with control and experimental groups	treatment group demonstrated greater knowledge at post-test and one month follow-up

* E3 level representation--linguistically-encoded, experientially grounded, generalizable knowledge

In contrast to the road safety studies, those studies targeting personal safety skills such as responding to the lures of strangers and prevention of sexual abuse and gun play have utilized behavioral skills training methods (Himle, Miltenberger, Flessner, & Gatheridge, 2004; Johnson, Miltenberger, Egemo-Helm, Jostad, Flessner, & Gatheridge, 2005; Marchand-Martella, Huber, Martella, & Wood, 1996; Wurtele, 1990). While the results from behavioral skills training indicate acquisition of the target skills, in vivo training appears to be necessary in achieving generalization or long-term maintenance. The inherent dangers of in vivo methods preclude its utilization in teaching fire safety to preschoolers.

Reflective Dialogue

Reflective dialogue involves the capacity to reflect on one's thinking and learning and to organize decisions and actions as a result of this process (Cullen, 1995). The results of Cullen's (1995) road safety education study support the use of reflective dialogue for increasing young children's awareness of the road safety rules presented during center times. Those centers which incorporated reflective dialogue procedures were more likely to have children with greater ability to recall and to reason about the concepts presented when compared to children who had not engaged in teacher-initiated discussions (Cullen, 1995). Within Cullen's study, reflective dialogue procedures included teachers' use of available opportunities to engage children in conversation about their activities during center time. A group time followed center time, in which the teacher talked with children about their play, encouraging them to reflect on their activities for the day and how they could utilize this new knowledge (Cullen, 1995).

Fire Safety Research Study

The current study is a part of a larger Fire Safety Project funded by FEMA (Federal Emergency Management Agency) to develop and test fire safety curriculum with preschoolers. Eight concepts have been identified by fire safety experts as critical to children's safety: (1) stay away from hot things that hurt; (2) tell a grown up when you find matches or a lighter; (3) stop, drop, and roll if your clothes catch on fire; (4) cool a burn with cool water; (5) know the sound of a smoke alarm; (6) practice an escape plan; (7) crawl low under smoke; (8) recognize the firefighter as a helper (Simmons-Coates & White, 2005). For the purpose of this study two concepts, recognize the firefighter as a helper and stay away from hot things that can hurt, were selected for implementation. These two concepts were chosen based on their foundational nature and what was believed by the researcher, special education classroom teachers, and the fire safety team to be the most appropriate for preschoolers with developmental delays.

Cullen's (1995) approach of teacher scaffolding and reflective dialogue during center and group times guided the development and implementation of curriculum for this study. Embedded learning opportunities were available through the provision of materials in the classroom centers. Teachers were encouraged to engage students in reflective dialogue about the fire safety concepts during closing group time each day.

Hypotheses

1) Participants will demonstrate increased knowledge of the fire safety concepts presented.

2) Extended exposure to the curriculum will increase reflective dialogue regarding the fire safety concepts presented.

CHAPTER III

METHODOLOGY

Participants

Fourteen preschool students enrolled in two self-contained special education classrooms agreed to serve as participants. Parents received a letter from their child's teacher endorsing the project along with the Parent Consent Form (Appendix A). Students ranged in age from 3 to 6 years and qualified for special education preschool services by the state of Oklahoma under the category of Developmental Delay. Descriptive information (age, gender, and suspected disability) is provided in Table 3. Suspected diagnoses were provided by both school personnel and parents (Appendix B).

Materials

Each classroom was provided identical resources (Appendix C), which included a variety of age appropriate fire safety related toys, books, and instructional materials to be placed in the classroom centers. The classrooms had multiple centers (literacy, math, computer, language, toys, and dramatic play) through which students were rotated within a structured time frame. In both classrooms a teacher, teacher assistant, or therapist was available to assist and guide students at each center.

Instruments

A pre- and post- test was administered to each student to assess his or her fire safety knowledge (Appendix D). This assessment included two open-ended questions and ten forced-choice items in which students were asked to "show me the firefighter," "show me what the firefighter drives," and "show me what is hot that can hurt you" while being

Table 3

Participants' Age, Gender, and Suspected Disability

Subject ID	Age (year.month)	Gender	Suspected Disability	
			School Report	Parent Report
Classroom One				
1	5.7	female	Other Health Impaired	emotional disturbance
2	4.11	male	Mental Retardation	"slow on learning" speech/language impairment and developmental delay
3	6	male	Specific Learning Disability	speech/language *delay* developmental delay
4*	5.8	female	Mental Retardation	no response from parent
5	6.6	male	Mental Retardation	no response from parent
Classroom Two				
6	5.9	female	Mental Retardation	developmental delay
7*	5.8	male	Mental Retardation	no response from parent
8	4.8	female	Specific Learning Disability	developmental delay, learning disability, "speech"
9*	5.4	male	Deaf/Hearing Impaired	no response from parent
10**	5	male	Deaf/Hearing Impaired	deaf
11**	5	female	Deaf/Hearing Impaired	deaf
12*	5.9	female	Deaf/Hearing Impaired	no response from parent
13***	3.4	male	Deaf/Hearing Impaired	hearing impairment, speech/language impairment, "some hearing and language trouble"
14***	3.4	male	Deaf/Hearing Impaired	hearing impairment, speech/language impairment, "some hearing and language trouble"

*English was not listed as the primary language spoken in the home.

**Fraternal Twins

***Identical Twins

shown two pictures. Correct answers for the forced-choice items were randomly placed to the child's left and child's right within each trial. This instrument was modified from the pre- and post-test developed by researchers with the OSU Fire Safety Curriculum for Preschoolers (Simmons-Coates & White, 2005). A published assessment which addressed the concepts pertinent to this study could not be located. While testing those students with hearing impairments, the researcher wore an FM system microphone and the classroom interpreter signed the questions to the child. The post-test was administered in the same manner on either day 9 or day 10 of curriculum implementation.

Procedure

Classroom teachers were asked to identify students with consistent attendance who demonstrated the ability to complete forced-choice tasks and the ability to produce communicative language during group time. These skills were necessary for the completion of the pre- and post-tests and the reflective dialogue measures. The researcher administered the fire safety pretest to each child individually approximately one week before implementation of the curriculum. The classroom teacher advised which students did not typically attend school on Fridays, thus the post-test was administered to these students on day 9 rather than day 10.

The curriculum (Appendix C) was implemented in both classrooms over a two-week period. During week one the curriculum focused on recognizing the firefighter as a helper (concept one), while week two highlighted learning to stay away from hot things that can hurt (concept two). Each class met for two and one-half hours, Monday through Friday. The fire safety concepts were presented by the teacher, teacher assistant, and researcher with emphasis on providing scaffolding and encouraging reflective dialogue. The classroom teacher led group time at the end of each school day while being

videotaped by the researcher. During this time teachers were encouraged to engage students in reflective dialogue about the fire safety activities presented in the classroom centers. The teachers were also asked to read fire safety books and sing fire safety songs. The researcher recorded each subject's reflective dialogue occurrences on the Group Time-Reflective Dialogue form (Appendix E) from the videotapes.

Data Coding

Each answer on the pre- and post-test of fire safety knowledge was coded as correct or incorrect; the correct number of answers was totaled for a possible score ranging from 0 to 12 for each child (see Table 4). Inter-rater reliability with independent scoring by the researcher and a graduate student (who was not a member of the Fire Safety Research team) was utilized for the open-ended questions with no disputes, thus 100% agreement. Group Time—Reflective Dialogue was coded by both the researcher and the same graduate student from the videotaped group times by tally marks for child-verbalizations or signs related to the two fire safety messages being presented: recognize the firefighter as a helper and stay away from hot things that hurt. Inter-rater reliability with independent scoring was utilized for day one and day ten with 99% reliability. There was one dispute regarding reflective dialogue in Classroom Two which was resolved by reviewing the videotape. Upon review, it was determined that the graduate student failed to code a child's comments expressed through sign language. Participants' individual scores are reported as the average number of reflective dialogue comments per minute of daily group time (see Table 4). Qualitative data was also captured by transcribing some examples of reflective dialogue comments from the videotapes of group time (see Table 5).

Table 4

Subject Results: Pre- and Post-Tests and Reflective Dialogue (RD day.concept)

Subject ID	Pre-test (Range 0-12)	Post-test (Range 0-12)	RD day 1 concept 1	RD day 1 concept 2	RD day 2 concept1	RD day 2 concept 2	RD day 3 concept 1	RD day 3 concept 2	RD day 4 concept 1	RD day 4 concept 2	RD day 5 concept 1	RD day 5 concept 2
1	12	12	0.428	0.142	0.692	0	0.714	0	0.352	0.117	0.428	0.142
2	5	10	0.142	0	0.153	0	0	0	0.117	0	0.428	0
3	7	10	0.142	0	0.461	0	0.142	0	0.058	0.058	0.428	0
4	10	11	0.142	0.142	0.384	0	0.142	0	0.294	0.058		
5	11	12	0.428	0.285			0.428	0	0.176	0.058		
6	12	12	0.3	0	0.444	0	0.166	0	0.375	0		
7	10	12	0.2	0	0.111	0	0.166	0	0.312	0.062	0.23	0
8	11	12	0.1	0								
9	5	10			0.333	0	0.25	0			0.153	0
10	4	4	0.1	0	0.444	0	0.33	0	0.25	0	0.384	0
11	3	8	0	0	0	0	0.166	0	0.25	0	0.384	0
12	10	9							0.125	0	0.384	0
13	6	7	0	0	0	0	0.083	0	0.25	0		
14	6	9	0.1	0	0	0	0.083	0	0.187	0		

Subject ID	RD day 6 concept 1	RD day 6 concept 2	RD day 7 concept1	RD day 7 concept 2	RD day 8 concept 1	RD day 8 concept 2	RD day 9 concept 1	RD day 9 concept 2	RD day 10 concept 1	RD day 10 concept 2	Subject RD mean day 1 - day 10
1	0	0.666	0	0.75	0	0.571	0	0.75			0.32
2	0	0	0	0	0	0.142	0	0	0	0.2	0.059
3	0	0	0	0.5	0	0.285	0	0	0	0.8	0.144
4	0	0.222	0	0.375	0	0.285	0	0.75	0	0	0.155
5	0	0.857					0	0.75			0.298
6											0.161
7	0.153	0.153			0.2	0.3	0.125	0.25	0	0.4	0.148
8	0	0	0	0.125	0	0.1	0	0.125	0	0	0.038
9	0.076	0.076	0.187	0.125	0.6	0.2	0.125	0	0	0	0.133
10	0.076	0	0.437	0.25	0.4	0.6	0.25	0.125	0	0	0.182
11	0.384	0	0.25	0.125	0.3	0.3	0.25	0.125	0	0	0.127
12	0.153	0.384	0.312	0.25	0.3	0.4	0.25	0.5	0	0.2	0.233
13	0.153	0	0	0.062	0.1	0	0	0			0.04
14	0.23	0.076	0.125	0.062	0	0	0	0			0.054

RD is reported as the average number of reflective dialogue comments per minute of daily group time

blank cells indicate student's absence

Table 5

Examples of Subjects' Reflective Dialogue (RD)

Subject ID	RD Concept One	RD Concept Two
1	"I dress up like the firefighter, drive the fire truck." "The firefighter will come to our house." Asked visiting fireman, "do you put out fires?"	"It caught on fire cause, maybe cause of the stove" "I'm supposed to get away from the stove." "When it cools down we can touch it." "One time in 2005, I touched the stove."
2	"Thank you, firefighter"	
3		When pointing to a picture of a lit match, "ouch, no touch."
4	Pointing to firefighter's mask, "not scary"	"Oh, fire, hot!"
5	When showing classmates what he did at centers, engaged in pretend play: female doll said, "I can't get down." Firefighter toy "saved the girl."	"fireplace is hot" "My mama's microwave caught on fire."
6		
7	"call fireman when fire"	
8		
9		
10	Showed visiting firefighter his fireman costume and signed, "I firefighter, same."	
11		
12		Looking at picture of stove signed, "it hot, so hot, don't touch it! Hurt you bad, go to hospital."
13		
14	Recognized the firefighter in book was the same as the firefighters pictured on the calendar—signed "firefighter, same"	

CHAPTER IV

FINDINGS

Preliminary Analyses

Preliminary analyses were conducted to assess the variance in pretest scores and reflective dialogue between Classroom One and Classroom Two. The purpose of these analyses was to determine if the classroom subjects could be collapsed for the primary analyses. Given the small sample size, the Mann-Whitney U was used (see Table 6). Participants in Classroom One had a mean score of 9 on the pretest (sd = 2.9155) and a mean of .2564 for reflective dialogue (sd = .1566). Classroom Two students had a mean score of 7.444 (sd = 3.3208) on the pretest and a mean of .1143 (sd = 1.069) for reflective dialogue. The difference in Classroom One and Two pretest scores was not statistically significant (U = 15.50, z = -.942, p = .346); thus the subjects' scores from both classrooms were collapsed for the primary analysis.

The variance between Classroom One and Two regarding the number of reflective dialogue instances on day one, concept one and concept two was also analyzed with the Mann-Whitney U and found to be significant for concept one (U = 6, z = -2.227, p = .026) and concept two (U = 9, z = -2.51, p = .012). Also, for those subjects (9 and 12) who were absent on day one, the reflective dialogue missing values were corrected by computing the mean of the absent subject's classmates' reflective dialogue and replacing the missing values with the average for day one.

Primary Analyses

Due to the results of the preliminary analyses, the subjects from Classrooms One and Two were collapsed for the pre-test to post-test analysis, but were not collapsed for

Table 6

Preliminary Analyses using Mann-Whitney U Test

	Subject ID	Pre-test (Range 0-12)	Reflective dialogue (#of comments ÷ group time minutes)	
			Concept one	**Concept two**
Classroom One	1	12	0.428	0.142
	2	5	0.142	0
	3	7	0.142	0
	4	10	0.142	0.142
	5	11	0.428	0.285
		$\bar{x}$ = 9.00, sd =2.915	**$\bar{x}$ = .2564, sd =.1566**	**$\bar{x}$ = .1138 sd = .1192**
Classroom Two	6	12	0.3	0
	7	10	0.2	0
	8	11	0.1	0
	9	5	0.114	0
	10	4	0.1	0
	11	3	0	0
	12	10	0.114	0
	13	6	0	0
	14	6	0.1	0
		$\bar{x}$ = 7.44, sd =3.321	**$\bar{x}$ = .1142, sd =.0925**	**$\bar{x}$ = 0 sd = 0**
Mann-Whitney U results:		***U* = 15.50 *p* = .364 *z* = -.942**	***U* = 6 *p* = .029 *z* = -2.227**	***U* = 9 *p* = .083 *z* = -5.510**

the reflective dialogue repeated measures analyses. The Wilcoxon Signed Ranks Test was utilized as the comparison measure throughout the primary analyses. The Wilcoxon was selected due to its ability to measure direction and magnitude within pairs of small samples (Siegel & Castellan, 1988). Table 7 provides subjects' raw scores and change scores for the pre- and post-tests. Table 8 provides a visual summary of the results for concept one and concept two for both classrooms.

Pre- and Post-test Results

The Wilcoxon revealed the increase in student scores from the pre- to post-test was statistically significant, z = -2.701, $p = .007$. The mean score on the pre-test was 8.00 (sd = 3.162) and the mean on the post-test was 9.86 (sd = 2.349).

Concept One Results for Classroom One

Participants' instances of reflective dialogue regarding concept one, recognize the firefighter as a helper, were compared using the Wilcoxon from day one to day four and also from day one to day nine. Day four and day nine were selected instead of days five and ten, due to excessive student absences on both of those days. Day one ($\bar{x}$ = .2564, sd = .1566) to day four ($\bar{x}$ = .1194, sd = .1220) results did not reach statistical significance, z = -.944, p = .345. Day one to day nine results (z = -2.070, p = .038) also did not reach statistical significance. Note the sum of positive ranks is zero and the means (day one: $\bar{x}$ = .2564, sd = .1566; day nine: $\bar{x}$ = 0, sd = 0) were negative in direction.

Concept One Results for Classroom Two

The results for concept one in Classroom Two were also measured with the Wilcoxon signed ranks test comparing reflective dialogue from day one to day four and

Table 7

Pre-test to Post-test Raw Scores (Range 0 – 12)

Subject	Pre-test Score	Post-Test Score	Change Score
1	12	12	0
2	5	10	+5
3	7	10	+3
4	10	11	+1
5	11	12	+1
6	12	12	0
7	10	12	+2
8	11	12	+1
9	5	10	+5
10	4	4	0
11	3	8	+5
12	10	9	-1
13	6	7	+1
14	6	9	+3

Table 8

Reflective Dialogue Results by Classroom for Concepts One and Two

Concept One	RD day 1 concept 1	RD day 4 concept 1	RD day 1 concept 1	RD day 9 concept 1
Classroom One	$\bar{x}$ =.2564 sd = .1567 **z = -.944** ***p* = .345**	$\bar{x}$ = .1994 sd = .1220	$\bar{x}$ =.2564 sd = .1567 **z = -2.07** ***p* = -.038**	$\bar{x}$ = 0 sd = 0
Classroom Two	$\bar{x}$ = .1142 sd = .0926 **z = -2.668** ***p* = .008**	$\bar{x}$ =.2497 sd = .0699	$\bar{x}$ = .1142 sd = .0926 **z = -.280** ***p* = .779**	$\bar{x}$ = .125 sd = .1083

Concept Two	RD day 1 concept 2	RD day 9 concept 2	RD day 6 concept 2	RD day 9 concept 2
Classroom One	$\bar{x}$ = .1138 sd = .1192 **z = -1.633** ***p* = .102**	$\bar{x}$ = .4500 sd = .4108	$\bar{x}$ = .349 sd = .3932 **z = -.535** ***p* = .593**	$\bar{x}$ = .4500 sd = .4108
Classroom Two	$\bar{x}$ = 0 sd = 0 **z = -2.226** ***p* = .026**	$\bar{x}$ = .1405 sd = .1586	$\bar{x}$ = .0861 sd = .1240 **z = -1.832** ***p* = .067**	$\bar{x}$ = .1405 sd = .1586

again from day one to day nine. Classroom Two comparison of day one ($\bar{x}$ = .1142, sd = .0926) to day four ($\bar{x}$ = .2497, sd = .0699) did reach statistical significance at z = -2.668, p = .008. Classroom Two did have an increase in reflective dialogue, concept one meansfrom day one ($\bar{x}$ = .1142, sd = .0926) to day nine ($\bar{x}$ = .125, sd = .1083) however it was not statistically significant, z = -.280, p = .779. Subject absenteeism was problematic in Classroom Two, thus reflective dialogue missing values were corrected by substituting the class mean for that particular day.

Concept Two Results for Classroom One

Concept two (stay away from hot things that can hurt) was the fire safety message highlighted during days 6 through 10 of this study. Classroom One participants' instances of reflective dialogue about concept two were also compared using the Wilcoxon from day one to day nine and from day six to day nine (again day nine was selected as the comparison measure due to excessive student absences on day ten). Day one ($\bar{x}$ = .1138, sd = .1192) to day nine ($\bar{x}$ =.4500, sd = .4108) comparison of reflective dialogue about concept two did show a positive increase in means, but did not reach statistical significance, z = -1.633, p = .102. Day six ($\bar{x}$ = .349, sd = .3932) to day nine ($\bar{x}$ =.4500, sd = .4108) comparisons were similar to day one to day nine in revealing a positive increase in means, but again statistical significance was not reached, z = -.535, p = .593.

Concept Two Results for Classroom Two

Classroom Two subjects' instances of reflective dialogue about concept two were compared from day one ($\bar{x}$ = 0, sd =0) to day nine ($\bar{x}$ = .1405, sd = .1586) and from day

six ($\bar{x}$ = .0861, sd = .1240) to day nine ($\bar{x}$ = .1405, sd = .1586) again using the Wilcoxon. Significance was strongly approached from day one to day nine (z = -2.226, p = .026) and also approached from day six to day nine (z = -1.832, p = .067). Missing values for concept two were corrected in the same manner as missing values for concept one: the absent subject's missing value was replaced with the classroom mean for that particular day.

Summary

The preliminary analyses revealed the differences in Classroom One and Classroom Two subjects' pretest scores were not statistically significant; thus, the subjects from the two classrooms were collapsed for the primary data analyses of pre- to post-test scores. As expected, participants from both classrooms demonstrated a significant statistical increase (z = -2.701, p = .007) in their knowledge of the fire safety concepts as measured by comparing pre-test scores ($\bar{x}$ = 8.00 sd = 3.162) to post-test scores ($\bar{x}$ = 9.86, sd = 2.349).

The results of the preliminary analyses of reflective dialogue did indicate significant statistical difference between the subjects in Classroom One and Two on reflective dialogue for both concepts; therefore, the classrooms were analyzed separately for this measure. Extended exposure to the curriculum significantly increased Classroom Two subjects' reflective dialogue regarding concept one (day one to day four) and concept two (day six to day nine). Subjects in Classroom One did not have a significant increase in reflective dialogue for either of the fire safety concepts presented.

CHAPTER V

DISCUSSION

The first hypothesis (participants will demonstrate increased knowledge of the fire safety concepts presented) was clearly supported as the participants did demonstrate increased knowledge of the fire safety concepts presented as measured by subjects' pre-test to post-test scores. It was also hypothesized that extended exposure to the curriculum would increase subject's reflective dialogue regarding the fire safety concepts presented. The results of this hypothesis were confounded by several variables which will be discussed in detail throughout this chapter. Even with confounding variables, such as excessive absenteeism and a wide range of expressive language capacity, the students in Classroom Two evidenced significant increases in their reflective dialogue of both concept one (day 1 to day 4) and concept two (day 6 to day 9). The difference in Classroom One and Classroom Two reflective dialogue results are best explained by highlighting the sociocultural environment, represented in both student characteristics and classroom variables.

Student Characteristics

The excessive absence of participants from both classrooms was an unfortunate reality in this study. Teachers reported student absences were especially prevalent on Fridays. It is also likely that students' diagnoses impacted their absenteeism, and this is to be expected when studying young children with disabilities. An attempt at correcting this problem for data analyses was made by computing the mean of the absent subject's classmates' reflective dialogue and replacing the missing values with the average for that particular day for both concept one and two.

The diversity in students' expressive language is illustrated in Table 4 by the extreme range (.04 - .32) in subject's reflective dialogue mean over the 10 days of curriculum. Observation of the students in context indicated a lack of expressive language either through sign or voice as a possible explanation for this wide range, particularly for students (subjects 9-14) who are deaf/hearing impaired. The deaf/hearing impaired subjects were more likely to respond with rote, one word answers to the teachers' questions during group time and did not show the expressive language to elaborate on their answers. For example, when asked about hot things that can hurt, a common answer by deaf/hearing impaired children was to sign a specific item: stove, iron, fire, etc. For those students (subjects 1-8) whose suspected disability was not deaf/hearing impaired, their answers to such a question typically included a more detailed answer and account of a memory: "my mama's microwave caught on fire," "I'm supposed to stay away from the stove" "one time in 2005, I touched the stove." This difference in subjects' expressive language was also apparent when administering the pre- and post-tests. Not one of the deaf/hearing impaired students was able to answer correctly, or even guess, the open-ended items ("what does a firefighter do?" and "tell me what is hot that can hurt you.") included on the pre-test; as compared to their hearing peers who five subjects out of eight were able to answer one or both of the open-ended items correctly on the pre-test.

These findings regarding student characteristics help to bridge a portion of the research gap, which Wolery and Bailey (2002) referenced in their report to the President's Commission on Special Education. Wolery and Bailey advocated for research studies that explored, "whether particular types of intervention are more efficacious for children with different types of disabilities" (p. 92). Given the significant

increases in Classroom Two subjects' reflective dialogue across time, it appears the sociocultural approach including embedded learning opportunities, teacher scaffolding, and reflective dialogue is a useful teaching method even for children who do not have the expressive language capacity (i.e. deaf/hearing impaired) to fully elaborate on the concepts being taught.

Classroom Variables

While it is well recognized that a vast array of environmental variables are influential in children's learning of new concepts (National Association for the Education of Young Children, 1997) those which appeared to directly influence this study's participants' occurrence of reflective dialogue are teaching strategies, curriculum implementation, provision of materials, and chance occurrences in the natural environment.

As expected there were observable differences in the strategies used by the teachers from Classroom One and Classroom Two. The teacher in classroom one appeared less flexible in her responses to students' interest and more scripted in her attempts to engage children in reflective dialogue. Possible explanations for these differences include years of experience teaching (classroom one was a first year teacher; while classroom two's teacher had 22 years of teaching experience) and nervousness or apprehension regarding the researcher's presence in the classroom. Given these differences it is not surprising that the findings indicate significant increases in reflective dialogue for Classroom Two, but not in Classroom One.

The differences in teaching style were further highlighted in the implementation of the curriculum. While "recognize the firefighter as a helper" was the primary focus of week one and "stay away from hot things that can hurt" the focus of week two, the

curriculum was intended to be fluid and allow for overlap of these two concepts, as well as, expansion to other fire safety concepts when appropriate. Again, the classroom one teacher followed the letter of the curriculum plan, while ignoring further learning opportunities for her students. An example of this was observed by the researcher when subject one was able to recite additional fire safety concepts: "crawl low under smoke," "call 9-1-1," "go to your meeting place," and "stop, drop, and roll". Unfortunately instead of using these opportunities to scaffold this student's and her classmates' understanding of fire safety, the teacher redirected the child to discussing only concept one or two. In contrast, when subject seven (from Classroom Two) recalled the firefighter's instruction to call 9-1-1 in an emergency, his teacher engaged all of the students in further reflective dialogue about calling 9-1-1 and the firefighter's visit, asking such questions as "who can show me 9-1-1 on the telephone?" and "what else did firefighter Kyle tell us to do in an emergency?"

The third environmental variable, provision of materials, also appeared to influence the occurrence of reflective dialogue. Several students utilized the fire safety materials as props when engaging in reflective dialogue. This seemed particularly salient for those students who had less expressive language either through voice or sign. The firefighter costumes were worn with great excitement by subjects 9, 10, 13, and 14. These participants frequently signed "same" and pointed to pictures of firefighters placed in the classroom. They also engaged in pretend play while wearing the costumes and drove the fire truck, rescued classmates, and used a hose to put out fires. The students in Classroom Two had free access to all the fire safety materials throughout their school day in contrast to Classroom One where the teacher only made available the materials needed to complete the center activities for each particular day. The classroom one teacher

removed many of the fire safety materials related to concept one on day six of curriculum implementation. This removal of materials may explain the drop-off in concept one reflective dialogue from day one to day nine for those students in Classroom One.

The final classroom variable was an unavoidable encounter which could not have been predicted. Subjects 8-14 were introduced to firefighters in casual uniform on day seven of the curriculum implementation during an unplanned visit by local firefighters to their school. When responding to item #3 on the post-test in which students were asked to "show me the firefighter" when shown a picture of a firefighter in his fire fighting gear and a uniformed police officer, six out of the eight students who interacted with the uniformed firefighters selected the uniformed police officer on the post-test. Thus, while the pre-test to post-test scores comparison was significant, the results might have been stronger had this unexpected exposure to uniformed firefighters not occurred.

The classroom variables influence on the target outcome (occurrence of reflective dialogue) gives credence to the sociocultural theoretical framework presented earlier in this manuscript. These examples of differing teaching strategies, implementation of curriculum, provision of materials, and an unanticipated firefighter visit all emphasize the influence of the social and physical contexts present. The specific student examples also provide illustrations of the use, or lack of, the sociocultural concepts: scaffolding, intermental and intramental planes, and the zone of proximal development (Mahn, 1999; Englert & Mariage, 2003; Vygotsky, 1978).

Limitations

A limitation of this study is the generalizability of the results due to the small sample size. However, in comparison to the four published studies (Christensen & Lignugaris-Kraft, 1996; Collins & Griffen, 1996; Gast, Collins, Wolery, & Jones, 1993;

Utley, Reddy, Delquadri, Greenwood, Mortweet, & Bowman, 2001) discussed in the review of the literature which endeavored to teach safety concepts to preschool children with disabilities, the number of participants included here is not only acceptable, but greater than the norm. The lack of homogeneity regarding students' disabilities and functional skills is also a limitation of this study. Due to the wide range in subjects' expressive language, additional measures of students' play might have yielded more significant results given the high interest students exhibited with the fire safety toys.

Summary

In summary, the findings from this research appear to validate the need for further safety education and make a significant contribution to the sparse body of literature which focuses on teaching young children with disabilities critical safety concepts. As stated earlier, children account for 15% to 20% of fire related deaths and 14% of fire related injuries (United States Fire Administration, 2005) with 80% of those deaths being children under the age of ten. Additionally, persons with impaired physical and cognitive abilities are more susceptible to death and injury from fire than other groups (United States Fire Administration, 2002). While further research is warranted to explore effective curricular methods in teaching fire safety concepts to children with specific disabling conditions, the use of a sociocultural approach through embedded learning, teacher scaffolding, and reflective dialogue provides a foundation on which other empirical studies can build.

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APPENDIXES

APPENDIX A

Parent Consent Form

Consent Form
(Parent - Child Participant)

I am consenting to allow my son/daughter to participate, in a research study titled:

Teaching Preschool Children with Developmental Delays
Critical Concepts in Fire Safety: A Sociocultural Approach
by: Jennifer L. Jones

The purpose of this study is to explore the effectiveness of an adapted curriculum to teach fire safety concepts to preschoolers with developmental delays.

- I understand and am consenting to the researcher administering a pre- and post- fire safety knowledge test to my child.
- If I **do** consent to my child's participation then the researcher may interact with my child and other study participants in the classroom along with my child's teacher during a two week time period beginning February 27, 2006 and ending March 10, 2006.
- I understand this curriculum will be implemented in my child's classroom over this two week period by my child's teacher even if I **do not** consent to my child participating in the study.
- I understand and consent to the researcher videotaping group time (approximately 15 to 20 minutes each day) for the purpose of this study. After the videotapes are transcribed by the researcher, the actual tape and thus all identifying information contained therein will be destroyed.
- If I **do not** consent to my child's participation in this study, I understand that my child will be present during videotaping, but will be seated in such a way that he or she is not included on the videotape. If an appropriate seating arrangement during the videotaping cannot be accomplished, then my child may be engaged in other academic activities by his or her teacher assistant during this brief time period.
- I understand and am consenting for my child's most recent assessment results conducted by the school psychologist to be provided to the researcher for the purpose of this study.
- I understand that there will be age appropriate information about fires and fire safety included in this study. Furthermore, I understand there are no known risks associated with this project which are greater than those ordinarily encountered in daily life.
- I understand that all data will be kept for 5 years after final publication of the results of this study, and then destroyed. Data will be stored in the Fire Safety Project's locked office on the campus of Oklahoma State University. The OSU IRB has the authority to inspect consent records and data files to assure compliance with approved procedures.
- I understand that the data will be held in the strictest confidence. Classroom observations and student survey data will be reported as group data and pseudonyms will be used when reporting individual results. Each participant will be given an ID number and upon completion of data entry, all matching lists of names and ID numbers will be destroyed.
- I understand that my child's responses will be kept confidential, and that the only people who will see the data results are the researcher, Jennifer L. Jones, her Oklahoma State University thesis committee members, and Fire Safety Project employees.
- I understand that participation is voluntary and my son/daughter will not be penalized if I choose not to allow him/her to participate. I further understand that I am free to withdraw my consent (to allow my son/daughter to participate) and end my son/daughters participation in this project at any time, without penalty after I notify the project director.
- I understand that I will be paid $10 for allowing my child to participate in this study.

Thank you for allowing your son/daughter to participate in this study!

Child's Legal Name _____

Parental Signature for Minor

I have read and fully understand the consent form. I have been given a copy of the consent form.

As parent or guardian I authorize _____
(print child's name)

to participate in the described research.

_____ _____
Parent/Guardian Name (printed) Date

I certify that I have personally explained this document before requesting that the participant sign it.

_____
Signature of Researcher

Fold and tear off below this line for contact information

If you have questions regarding this study please contact the following people:

Jennifer L. Jones, Researcher Oklahoma State University 405-974-1331 jennifer.jones@okstate.edu	Deborah Norris, Ph. D. Associate Professor Oklahoma State University 405-744-7084 deborah.norris@okstate.edu
For information regarding participants' rights, contact: Sue Jacobs, IRB Chair Oklahoma State University 415 Whitehurst Stillwater, Ok 74078 405-744-1676	

APPENDIX B

Family Information Sheet

ID # _____

Fire Safety Project: Family Information Sheet

Thank you for allowing your child to participate in the fire safety study. For the purpose of understanding better how children with special needs learn, please complete the following information.

1) Child's Birthdate: _____

2) Is English the primary language spoken in your home?

_____Yes
_____ No If no, please list the primary language: _____

3) Has your child been diagnosed with any of the following?
(circle all that apply)

Autism Hearing Impairment Emotional Disturbance Mental Retardation

Visual Impairment Speech/Language Impairment Cerebral Palsy

Down Syndrome Developmental Delay Learning Disability

Asperger Syndrome Traumatic Brain Injury

Other:_____

4) Please list the date of onset for your child's diagnosis (i.e. if your child had a disability when he or she was born, write onset at birth; if your child's disability occurred after birth, write the approximate date).
_____

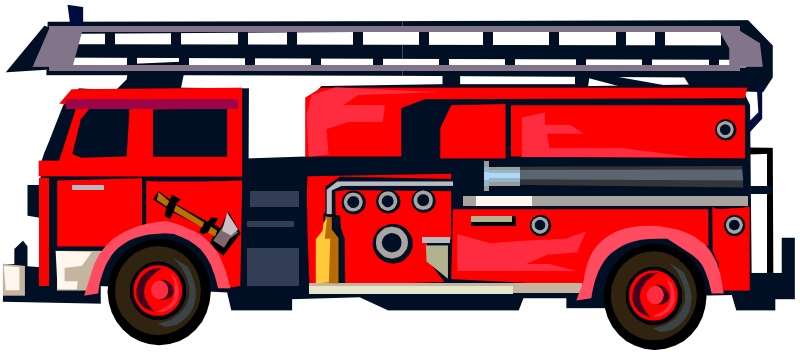
5) Is there any other information you would like to share regarding your child's disability?
_____
_____
_____
_____
_____

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS FORM.

APPENDIX C

Fire Safety Curriculum

Fire Safety Curriculum For Preschoolers



Introduction

The curriculum contained in this notebook was adapted from the Oklahoma State University Fire Safety Curriculum for Preschoolers. The intended audience for this adapted curriculum is preschool children (ages 3 to 6) with developmental delays.

Eight concepts have been identified by fire safety experts as critical to children's safety:
(1) Stay away from hot things that hurt.
(2) Tell a grown up when you find matches or a lighter.
(3) Stop, drop, and roll if your clothes catch on fire.
(4) Cool a burn with cool water.
(5) Know the sound of a smoke alarm.
(6) Practice an escape plan.
(7) Crawl low under smoke.
(8) Recognize the firefighter as a helper.

The adapted curriculum covers two of these concepts--*stay away from hot things that can hurt* and *recognize the firefighter as a helper*. These two concepts were chosen based on their foundational nature and what was believed by the author, special education classroom teachers, and the fire safety team to be the most appropriate for preschoolers with developmental delays.

For a copy of the original curriculum containing activities for all eight concepts, contact Deborah Norris, Ph. D., at deborah.norris@okstate.edu.

Kit Inventory

Teachers: *Here is a list of all the items included in your kit. Items with an asterisk* next to them are referenced in the daily lesson plans to be used for specific activities. Those without an asterisk* can be used anywhere in your classroom that you think will be beneficial in helping students learn the fire safety concepts presented.*

#	Item	Price
1	Francine Firefighter Puppet Brite-Kids www.star-brite.com/puppets.htm 888-858-2954	$3.00
1	Fireman puppet Puppetorium www.puppetorium.com 877-262-4117	$7.99
1	*Lil' Fire Stoppers Fire Station	
1	*Lil' Fire Stoppers Ladder Truck	
1	*Lil' Fire Stoppers Firefighters	
1	**Here ComeOur Firefighters!* by Chris Demarest www.amazon.com	$4.00-$7.00
1	*Firehouse Dog* by Amy and Richard Hutchings www.amazon.com	$4.00-$7.00
1	*I'm Going to Be a Fire Fighter* by Edith Kunhardt www.amazon.com	$3.50-$4.50
1	*Dinofours: It's Fire Drill Day!* by Steve Metzger www.amazon.com	$3.60-$6.00
1	**Firefighters A to Z* by Chris Demarest www.amazon.com	$5.25-$5.75
4	*Fire Chief Hats Oriental Trading Company Inc. www.orientaltrading.com	$3.95 for 12
1	Fire Truck Floor Puzzle www.utoypia.com 866-574-toys	$5.99-$10.99
1	Playhut Big Red Fire Engine www.walmart.com 800-925-6278	$15.72-$26.00
3	*Child Firefighter Costumes with Helmets and Gloves	$48.00
1	Picture CD	
1	Picture Album	
1	Firefighter Calendar	
1	Poster	
1	**Hot Things Hurt* by Jennifer Jones	
1	**Teacher, Teacher what do you see…I see a firefighter looking at me* by Jennifer Jones	

Concept	Opening Circle Time: Week One--Monday through Thursday
Recognize the firefighter as a helper	**Firefighter Fingerplay and book:** Help children learn the firefighter fingerplay (located in the reference section) each morning. A take-home page for this concept is located in the reference section. Choose one of the firefighter books to read each morning. It can be the same book every day if repetition is best for your students. *Here Come Our Firefighters!* by Chris Demarest *Firehouse Dog* by Amy & Richard Hutchings *I'm Going to Be a Fire Fighter* by Edith Kunhardt *Fire Fighters A to Z* by Chris Demarest

Concept	Opening Circle Time: Week One—Friday
Recognize the firefighter as a helper	**Firefighter fingerplay and Review of questions for the firefighter:** Lead the children in the firefighter fingerplay. Use the poster board from this week's Teacher Table lesson on Wednesday and Thursday to review the questions children have for the firefighter. Help to build excitement about the firefighter visit as well build confidence in the children to ask the firefighter their questions. You could have one child dress up in the firefighter costume while his or her classmates practice asking their questions.

Concept	Teacher Table: Week One—Wednesday and Thursday
Recognize the firefighter as a helper	**Questions you have for the firefighter:** Ask the children one at a time what questions they have for the firefighter. You may need to prompt them by using one of the firefighter books you have been reading each morning at opening circle time. Have a large piece of poster board ready on which to write their questions. If available, you can place the children's pictures and names on the poster board next to their questions. Hang the poster board in a visible place in the classroom.

Concept	Computer: Week One—Monday through Thursday
Recognize the firefighter as a helper	There are activity pages and games on "Sparky the Fire Dog" and "Safe T. Bear's Firehouse" websites. You will need to review these sites before class in order to determine what activities match your students' abilities. Some suggestions are the "fun with fire trucks" on Sparky's site and the "firefighter story" and "photos" on Safe T. Bear's site. Sparky the Fire Dog: http://www.sparky.org Safe T. Bear's Firehouse: http://www.safetbear.com

Concept	Center Time: Week One—Friday
Recognize the firefighter as a helper	**Visit from the firefighter:** The firefighter visit will replace Center Time for Friday. Have the children's questions from the firefighter poster board in sight. Be prepared to help children ask their question if needed.

Concept	Toys: Weeks One and Two—Monday through Thursday
Recognize the firefighter as a helper	**Fire House and Fire Trucks:** Have the fire house and trucks accessible to children in this area. Take advantage of opportunities to engage children in conversations about fire safety while they are playing. Be careful not to interrupt children's play, but to enrich their play experience. You can do this by engaging in pretend play with the firefighter figures and materials. Role play some of the scenarios that you have been reading about in opening circle time. Also be ready to add to the "Questions you have for the firefighter" poster board as children engage in play at this center.

Concept	Books: Week One—Monday through Thursday
Recognize the firefighter as a helper	The three books recommended for this center are: *Teacher, Teacher what do you see…I see a firefighter looking at me* by Jennifer Jones *Here Come Our Firefighters!* by Chris Demarest Have each child take turns "reading" the books to his or her classmates.

Concept	Dramatic Play: Week One—Monday through Thursday
Recognize the firefighter as a helper	**Firefighter Costumes:** Have the firefighter costumes and equipment accessible to children in this area. Take advantage of opportunities to engage children in conversations about fire safety while they are playing. Be careful not to interrupt children's play, but to enrich their play experience. You can do this by role playing some of the scenarios that you have been reading about in opening circle time. Also be ready to add to the "Questions you have for the firefighter" poster board as children engage in play at this center.

Concept	Group Time: Week One—Monday through Friday
Recognize the firefighter as a helper	**Discussion: Firefighters are our friends** This time is designed to expressively review what children have been introduced to in centers. Encourage children's reflective dialogue by reviewing the activities of each center. Have the children show you their work and encourage them to ask questions or make comments about the concept of firefighters as helpers. You can also use this time to build up the firefighter visit that will take place on Friday. On *Wednesday and Thursday* be sure to review the "questions you have for the firefighter" poster board. On *Friday* take time to reflect on what children learned from the firefighter's visit. You might write their answers on a poster board to hang in the classroom.

Concept	Opening Circle Time: Week Two—Monday through Friday
Stay away from hot things that hurt	**"Hot Things Hurt" song:** Help children learn the song (located in the reference section) each morning. A take-home page for this concept is located in the reference section. Continue reading some of the fire safety books provided in your kit.

Concept	Teacher Table: Week Two—Monday and Tuesday
Stay away from hot things that hurt	**What's Hot and What's Not Collages:** Before children arrive at the center have a piece of construction paper folded in half for each child. Label one side of the paper "hot" and the other side of the paper "cold." Have magazines available for children to cut out hot and cold item pictures. You may need to cut the pictures out ahead of time and focus on helping student's sort the items. Encourage conversation during this time—suggestions for questions and comments regarding this activity can be found in the reference section. Have each student share his or her collage with the other students at the center.

Concept	Teacher Table: Week Two—Wednesday and Thursday
Stay away from hot things that hurt	**Name hot things to stay away from:** Have children sit with you at a table or on the floor. Have pictures of hot things (fireplace, barbeque grill, lamp, candle, food cooking on the stove, cookies from the oven, etc) in front of you. Ask each child to name some things that are hot. Use pictures to prompt children as needed. Remove pictures and ask children if they can think of any other things that are hot. Have a pen and paper ready to write their answers. Next, take a piece of poster board and write "Hot Things to Stay Away From" across the top. Have each child find the picture of him or herself (have these pre-cut) and tape it on the left side of the poster board. Then tape the hot thing they found next to their picture. (You will need to have several copies of hot things.) Make sure to write and draw a picture of any hot things children thought of that you did not a have a picture for.

Concept	Computer: Week Two—Monday through Thursday
Stay away from hot things that hurt	There are activity pages and games on "Sparky the Fire Dog" and "Safe T. Bear's Firehouse" websites. You will need to review these sites before class in order to determine what activities best match your students' abilities. Some suggestions are the "arcade" on Sparky's site and the "toys & tools" on Safe T. Bear's site. Sparky the Fire Dog: http://www.sparky.org Safe T. Bear's Firehouse: http://www.safetbear.com There is a list of fire safety information for teachers in the reference section which may have other websites with games appropriate for your students.

Concept	Books: Week One—Monday through Thursday
Stay away from hot things that hurt	The book recommended for this center is: *Hot Things Hurt* by Jennifer Jones Have each child take turns "reading" the book to his or her classmates. Ask children to look through other books in the library area and try to find pictures of hot things that can hurt.

Concept	Dramatic Play: Week Two—Monday through Thursday
Stay away from hot things that hurt	Have the kitchen area equipped with pots and pans for the stove or oven along with pot holders, a pretend birthday cake, cups, tea kettle, etc. Encourage the children to pretend they are having a birthday party. Talk with them about ways they should stay away from hot things that hurt. Talk to them about how only an adult should remove items from the oven or light the birthday candle (see suggestions for this activity in the reference section).

Concept	Center Time: Week Two—Friday
Stay away from hot things that hurt	**Play dough**: making play dough will replace Center Time for Friday. (play dough recipe and more activity suggestions are located in the reference section). Have the children sit around a small table where they can see you make the play dough. If they are sitting in chairs it is easier to keep track of how far they are from the hot plate, and this keeps them safer. Talk to the children while you are making the play dough. You can let the children take turns adding ingredients. Make sure you discuss how the pot and burner are hot and how they need to stay away from hot things that can hurt us. Point out the steam they will see when the water boils. Talk about how you know it is hot and they should stay away from it also. Turn the burner off and let the children take turns stirring the play dough while you hold the handle of the pot for them. After the play dough forms a ball, let the children each have a small piece to knead. Then let the children play with it. You can add cookie cutters, rolling pins, etc. Talk about how it feels warm and how it is cooling down. Later, talk about how it feels cool.

Concept	Group Time: Week Two—Monday through Friday
Stay away from hot things that hurt	**Discussion: Hot Things can Hurt:** This time to reflect on what children have been introduced to in centers. Encourage children's reflective dialogue by reviewing the activities of each center. Have the children show you their work and encourage them to ask questions or make comments about hot things that can hurt. On *Monday and Tuesday* invite children to "show and tell" their "what's hot and what's not collages." On *Wednesday and Thursday* review the "hot things to stay away from" poster board. On *Friday* encourage children to talk about making the play dough. Ask them: What did you see? How did it feel? How did you know it was hot? What should we do when we see hot things?

APPENDIX D

Fire Safety Pre- and Post- Test

Fire Safety Pre- and Post Test

This assessment is designed to be administered by the researcher with each child individually. Picture sets should be placed with picture A on child's left and picture B on child's right.

Item 1. Ask the child, "what does a firefighter do?"
Child Response:

_____
_____
_____
_____
_____

Items 2-5. For items two through five place the picture set in front of the child and say, "show me the firefighter."

2) _____firefighter _____football player
3) _____firefighter _____police officer
4) _____nurse _____firefighter
5) _____firefighter _____basketball player

Item 6. For item six place the picture set in front of the child and say, "show me what the firefighter drives."

6) _____police car _____fire truck

Item 7. Say to the child, "tell me what is hot that can hurt you."
Child Response:

_____
_____
_____
_____
_____

Items 8-12. For items eight through twelve place the picture set in front of the child and say, "show me what is hot that can hurt you."

8) _____basketball _____coffee pot
9) _____candles _____tricycle
10)_____matches _____Mr. Potato Head®
11)_____toy train _____cigarette
12)_____oven/stove _____candy cane

Total Correct Answers:

APPENDIX E

Group Time Reflective Dialogue Code Sheet

Group Time—Reflective Dialogue

Time Started:_____ Book:_____
Time Ended:_____ Song:_____

# of Children Present:_____

Date:_____ Classroom:_____

	Recognize firefighter as a helper. Child-Verbalization	Stay away from hot things that hurt. Child-Verbalization	Total
Child one			
Child two			
Child three			
Child four			
Child five			
Child six			
Child seven			
Child eight			
Child nine			

APPENDIX F

Informative Letters and School Personnel Consent Forms

January 25, 2006

Mr. Glen Kastner
Director of Special Services
Putnam City Schools
5401 N.W. 40th
Oklahoma City, OK 73122

Dear Glen,

I sincerely appreciate you allowing me to conduct research in the special education preschool classrooms within the Putnam City School District. I will be collecting data in Kendra Cope's AM class at Lake Park Elementary and Diana Fine's AM class at Tulakes Elementary in late March and early April. The remainder of this letter provides some detail about my thesis project.

The title of my thesis is: *Teaching Preschool Children with Developmental Delays Critical Concepts in Fire Safety: A Sociocultural Approach.* According to the U.S. Fire Administration children account for 15% to 20% of fire deaths and 14% of fire injuries. Younger children tend to be the most vulnerable; in 2002, 56% of all child fire deaths were children under age five, and 80% were children under age 10. These tragic incidents are alarming.

In order to adequately research this issue I conducted an extensive literature review. I found that safety skills span across development and that particular components of such skills are best taught at early ages. Early training provides students the opportunity to comprehend basic safety concepts in hopes of making more complex discriminations as students mature. While a number of resources are available and utilized to address the problem of fire safety, no empirical studies were found exploring the effectiveness of the interventions used to teach fire safety concepts to preschoolers. Believing that early instruction is critical in achieving long-term understanding and application of safety skills, this study will seek to validate the effectiveness of utilizing a sociocultural perspective to teach fire safety concepts to preschoolers with developmental delays.

The project's research question is: *Will reflective dialogue increase the understanding of fire safety concepts with preschoolers who have developmental delays?*

This study will include a pre- and post-fire safety knowledge test which I will administer individually to each child. Ms. Cope and Ms. Fine will implement the curriculum in their classrooms over a two week period with me observing and interacting with students each day. Group time (approximately 20 minutes each day) will be videotaped for the purpose of accurately coding child responses. Attached you will find copies of the instruments, curriculum, and consent forms.

All data will be held in the strictest of confidence. Pseudonyms will be used when reporting any individual and/or group measurement results. I would be glad to provide you with a complete thesis proposal, at your request. Please feel free to contact me with any questions or concerns.

Sincerely,

Jennifer L. Jones
Oklahoma State University
Graduate College
Human Development and Family Science Department

January 25, 2006

Mr. Lee Roland
Principal, Tulakes Elementary
6600 N. Galaxie
Oklahoma City, Ok 73132

Dear Mr. Roland,

I sincerely appreciate you allowing me to conduct research in Diana Fine's PM special education preschool classroom. I am looking forward to being at Tulakes. The remainder of this letter provides some detail about my thesis project.

The title of my thesis is: *Teaching Preschool Children with Developmental Delays Critical Concepts in Fire Safety: A Sociocultural Approach.* According to the U.S. Fire Administration children account for 15% to 20% of fire deaths and 14% of fire injuries. Younger children tend to be the most vulnerable; in 2002, 56% of all child fire deaths were children under age five, and 80% were children under age 10. These tragic incidents are alarming.

In order to adequately research this issue I conducted an extensive literature review. I found that safety skills span across development and that particular components of such skills are best taught at early ages. Early training provides students the opportunity to comprehend basic safety concepts in hopes of making more complex discriminations as students mature. While a number of resources are available and utilized to address the problem of fire safety, no empirical studies were found exploring the effectiveness of the interventions used to teach fire safety concepts to preschoolers. Believing that early instruction is critical in achieving long-term understanding and application of safety skills, this study will seek to validate the effectiveness of utilizing a sociocultural perspective to teach fire safety concepts to preschoolers with developmental delays.

The project's research question is: *Will reflective dialogue increase the understanding of fire safety concepts with preschoolers who have developmental delays?*

This study will include a pre- and post-fire safety knowledge test which I will administer individually to each child. Ms. Fine will implement the curriculum in her classrooms over a two week period with me observing and interacting with students each day. Group time (approximately 20 minutes each day) will be videotaped for the purpose of accurately coding child responses. Attached you will find copies of the instruments, curriculum, and consent forms.

All data will be held in the strictest of confidence. Pseudonyms will be used when reporting any individual and/or group measurement results. I would be glad to provide you with a complete thesis proposal, at your request. Please feel free to contact me with any questions or concerns.

Sincerely,

Jennifer L. Jones
Oklahoma State University
Graduate College
Human Development and Family Science Department

January 25, 2006

Mr. John Lunn
Principal, Lake Park Elementary
8221 N.W. 30th Street
Bethany, Ok 73008

Dear John,

I sincerely appreciate you allowing me to conduct research in Kendra Cope's AM special education preschool classroom. I am looking forward to being at Lake Park. The remainder of this letter provides some detail about my thesis project.

The title of my thesis is: *Teaching Preschool Children with Developmental Delays Critical Concepts in Fire Safety: A Sociocultural Approach.* According to the U.S. Fire Administration children account for 15% to 20% of fire deaths and 14% of fire injuries. Younger children tend to be the most vulnerable; in 2002, 56% of all child fire deaths were children under age five, and 80% were children under age 10. These tragic incidents are alarming.

In order to adequately research this issue I conducted an extensive literature review. I found that safety skills span across development and that particular components of such skills are best taught at early ages. Early training provides students the opportunity to comprehend basic safety concepts in hopes of making more complex discriminations as students mature. While a number of resources are available and utilized to address the problem of fire safety, no empirical studies were found exploring the effectiveness of the interventions used to teach fire safety concepts to preschoolers. Believing that early instruction is critical in achieving long-term understanding and application of safety skills, this study will seek to validate the effectiveness of utilizing a sociocultural perspective to teach fire safety concepts to preschoolers with developmental delays.

The project's research question is: *Will reflective dialogue increase the understanding of fire safety concepts with preschoolers who have developmental delays?*

This study will include a pre- and post-fire safety knowledge test which I will administer individually to each child. Ms. Cope will implement the curriculum in her classrooms over a two week period with me observing and interacting with students each day. Group time (approximately 20 minutes each day) will be videotaped for the purpose of accurately coding child responses. Attached you will find copies of the instruments, curriculum, and consent forms.

All data will be held in the strictest of confidence. Pseudonyms will be used when reporting any individual and/or group measurement results. I would be glad to provide you with a complete thesis proposal, at your request.

Please feel free to contact me with any questions or concerns.

Sincerely,

Jennifer L. Jones
Oklahoma State University
Graduate College
Human Development and Family Science Department

January 25, 2006

Ms. Kendra Cope
Special Education Teacher
Lake Park Elementary
8221 N.W. 30th Street
Bethany, Ok 73008

Dear Kendra,

I sincerely appreciate you allowing me to implement the Fire Safety curriculum in your classroom. I am looking forward to working with you. The remainder of this letter provides some detail about my thesis project.

The title of my thesis is: *Teaching Preschool Children with Developmental Delays Critical Concepts in Fire Safety: A Sociocultural Approach.* According to the U.S. Fire Administration children account for 15% to 20% of fire deaths and 14% of fire injuries. Younger children tend to be the most vulnerable; in 2002, 56% of all child fire deaths were children under age five, and 80% were children under age 10. These tragic incidents are alarming.

In order to adequately research this issue I conducted an extensive literature review. I found that safety skills span across development and that particular components of such skills are best taught at early ages. Early training provides students the opportunity to comprehend basic safety concepts in hopes of making more complex discriminations as students mature. While a number of resources are available and utilized to address the problem of fire safety, no empirical studies were found exploring the effectiveness of the interventions used to teach fire safety concepts to preschoolers. Believing that early instruction is critical in achieving long-term understanding and application of safety skills, this study will seek to validate the effectiveness of utilizing a sociocultural perspective to teach fire safety concepts to preschoolers with developmental delays.

The project's research question is: *Will reflective dialogue increase the understanding of fire safety concepts with preschoolers who have developmental delays?*

This study will include a pre- and post-fire safety knowledge test which I will administer individually to each child. You will be provided the materials and curriculum to implement in your classroom over a two week period with me observing and interacting with students each day. Group time (approximately 20 minutes each day) will be videotaped for the purpose of accurately coding child responses. Attached you will find copies of the instruments, curriculum, and consent forms.

All data will be held in the strictest of confidence. Pseudonyms will be used when reporting any individual and/or group measurement results. I would be glad to provide you with a complete thesis proposal, at your request.

Please feel free to contact me with any questions or concerns.

Sincerely,

Jennifer L. Jones
Oklahoma State University
Graduate College

January 25, 2006

Ms. Diana Fine
Special Education Teacher
Tulakes Elementary
6600 N. Galaxie
Oklahoma City, Ok 73132

Dear Diana,

I sincerely appreciate you allowing me to implement the Fire Safety curriculum in your classroom. I am looking forward to working with you. The remainder of this letter provides some detail about my thesis project.

The title of my thesis is: *Teaching Preschool Children with Developmental Delays Critical Concepts in Fire Safety: A Sociocultural Approach.* According to the U.S. Fire Administration children account for 15% to 20% of fire deaths and 14% of fire injuries. Younger children tend to be the most vulnerable; in 2002, 56% of all child fire deaths were children under age five, and 80% were children under age 10. These tragic incidents are alarming.

In order to adequately research this issue I conducted an extensive literature review. I found that safety skills span across development and that particular components of such skills are best taught at early ages. Early training provides students the opportunity to comprehend basic safety concepts in hopes of making more complex discriminations as students mature. While a number of resources are available and utilized to address the problem of fire safety, no empirical studies were found exploring the effectiveness of the interventions used to teach fire safety concepts to preschoolers. Believing that early instruction is critical in achieving long-term understanding and application of safety skills, this study will seek to validate the effectiveness of utilizing a sociocultural perspective to teach fire safety concepts to preschoolers with developmental delays.

The project's research question is: *Will reflective dialogue increase the understanding of fire safety concepts with preschoolers who have developmental delays?*

This study will include a pre- and post-fire safety knowledge test which I will administer individually to each child. You will be provided the materials and curriculum to implement in your classroom over a two week period with me observing and interacting with students each day. Group time (approximately 20 minutes each day) will be videotaped for the purpose of accurately coding child responses. Attached you will find copies of the instruments, curriculum, and consent forms.

All data will be held in the strictest of confidence. Pseudonyms will be used when reporting any individual and/or group measurement results. I would be glad to provide you with a complete thesis proposal, at your request. Please feel free to contact me with any questions or concerns.

Sincerely,

Jennifer L. Jones
Oklahoma State University
Graduate College
Human Development and Family Science Department

Consent Form
(Teacher)

I am **consenting to allow my classroom to participate** in a study titled:

Teaching Preschool Children with Developmental Delays
Critical Concepts in Fire Safety: A Sociocultural Approach
by: Jennifer L. Jones

The purpose of this study is to explore the effectiveness of utilizing a sociocultural approach to teach fire safety concepts to preschoolers with developmental delays.

- I understand and am consenting to the researcher administering a pre- and post- fire safety knowledge test to my students.
- I understand and am consenting to implementing the curriculum in my classroom for a two week period in which time the researcher will be observing and interacting with students in my classroom.
- I understand and consent to the researcher videotaping group time (approximately 15 to 20 minutes each day) for the purpose of this study.
- I understand there will be age appropriate information about fires and fire safety included in this study. Furthermore, I understand there are no known risks associated with this project which are greater than those ordinarily encountered in daily life.
- I understand that all data will be kept for 5 years, then destroyed. Data will be stored in the Fire Safety Project's locked office on the campus of Oklahoma State University. The OSU IRB has the authority to inspect consent records and data files to assure compliance with approved procedures.
- I understand that the data will be held in the strictest confidence. Individual student survey data will be recorded using pseudonyms.
- I understand that my student's responses will kept confidential, and that the only people who will see the data results are the researcher, Jennifer L. Jones, her Oklahoma State University thesis committee members, and Fire Safety Project employees.
- I understand that participation is voluntary and my students will not be penalized if they choose not to participate.
- I understand that I am free to withdraw my consent and participation in this project at any time, without penalty after I notify the project director.

_____ _____
Teacher Signature Date

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me.

Date _____

Signed _____
Parent or Guardian

I certify that I have personally explained all elements of this form to the participant before requesting the participant sign it.

Signed _____
Jennifer L. Jones, Researcher

Fold and tear off below this line for contact information.

If you have questions regarding this study please contact the following people:

Jennifer L. Jones, Researcher Oklahoma State University 405-974-1331 jennifer.jones@okstate.edu	Deborah Norris, Ph. D. Assistant Professor Oklahoma State University 405-744-7084 deborah.norris@okstate.edu
For information regarding participants' rights, contact Sue Jacobs, IRB Chair Oklahoma State University 415 Whitehurst Stillwater, Ok 74078 405-744-1676	

Lake Park Elementary
8221 N. W. 30 • Bethany, OK 73008
(405) 789-7068 • Fax (405) 491-7590
E-mail: jlunn@putnamcityschools.org

John Lunn, Principal
Karen Florence, Secretary
Denise Williams, Secretary

January 25, 2006

To Whom It May Concern:

Jennifer Jones has my permission to collect data for her thesis project from a special education preschool classroom at our school. I understand that Mrs. Jones will be working closely with the classroom teacher to implement Fire Safety curriculum over a two week period. I also understand that Mrs. Jones will administer individual pre- and post-tests to students and be videotaping group time in the classroom.

We are looking forward to piloting the Fire Safety project with our special education preschool students.

If you have questions or concerns please feel free to contact me.

Sincerely,

John Lunn, Principal

PUTNAM CITY PUBLIC SCHOOLS
Tulakes Elementary School
*6600 N. Galaxie Drive *Oklahoma City, Oklahoma 73132 *(405) 721-4360*
Lee Roland
Principal
Lynn Johnson
Assistant Principal

January 25, 2006

To Whom It May Concern:

Jennifer Jones has my permission to collect data for her thesis project from a special education preschool classroom at our school. I understand that Mrs. Jones will be working closely with the classroom teacher to implement Fire Safety curriculum over a two week period. I also understand that Mrs. Jones will administer individual pre- and post-tests to students and be videotaping group time in the classroom.

We are looking forward to piloting the Fire Safety project with our special education preschool students.

If you have questions or concerns please feel free to contact me.

Sincerely,

Lee Roland

Lee Roland, Principal

APPENDIX G

Institutional Review Board Approval

Oklahoma State University Institutional Review Board

Date:	Thursday, February 16, 2006
IRB Application No	HE0638
Proposal Title:	Teaching Preschool Children With Developmental Delays Critical Concepts in Fire Safety: A Sociocultural Approach
Reviewed and Processed as:	Expedited (Spec Pop)

Status Recommended by Reviewer(s): Approved Protocol Expires: 2/15/2007

Principal Investigator(s

Jennifer L. Jones
8020 NW 15th St.
Oklahoma City, OK 7312

Patricia Self
226A HES
Stillwater, OK 74078

The IRB application referenced above has been approved. It is the judgment of the reviewers that the rights and welfare of individuals who may be asked to participate in this study will be respected, and that the research will be conducted in a manner consistent with the IRB requirements as outlined in section 45 CFR 46.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

As Principal Investigator, it is your responsibility to do the following:

1. Conduct this study exactly as it has been approved. Any modifications to the research protocol must be submitted with the appropriate signatures for IRB approval.
2. Submit a request for continuation if the study extends beyond the approval period of one calendar year. This continuation must receive IRB review and approval before the research can continue.
3. Report any adverse events to the IRB Chair promptly. Adverse events are those which are unanticipated and impact the subjects during the course of this research; and
4. Notify the IRB office in writing when your research project is complete.

Please note that approved protocols are subject to monitoring by the IRB and that the IRB office has the authority to inspect research records associated with this protocol at any time. If you have questions about the IRB procedures or need any assistance from the Board, please contact Beth McTernan in 415 Whitehurst (phone: 405-744-5700, beth.mcternan@okstate.edu).

Sincerely,

Sue C. Jacobs, Chair
Institutional Review Board

VITA

Jennifer Lynn Jones

Candidate for the Degree of

Master of Science

Thesis: TEACHING PRESCHOOL CHILDREN WITH DEVELOPMENTAL DELAYS CRITICAL CONCEPTS IN FIRE SAFETY: A SOCIOCULTURAL APPROACH

Major Field: Human Development and Family Science

Biographical:

Education: Received a Bachelor of Science degree in Family Relations and Child Development from Oklahoma State University, Stillwater, Oklahoma in July 1995. Completed the requirements for the Master of Science degree with a major in Human Development and Family Science (July, 2006).

Experience:

- Graduate Research Assistant, Oklahoma State University, Human Development and Family Science Department (2005 to present)
- Executive Director, Deaconess Home Pregnancy & Adoption Services (2002 to 2005)
- Foster and Adoptive Parent, State of Oklahoma Department of Human Services (1996 to present)
- Medical Social Worker, The Children's Center (1995 to 1997)

Name: Jennifer Lynn Jones Date of Degree: July, 2006

Institution: Oklahoma State University Location: Stillwater, Oklahoma

Title of Study: TEACHING PRESCHOOL CHILDREN WITH DEVELOPMENTAL DELAYS CRITICAL CONCEPTS IN FIRE SAFETY: A SOCIOCULTURAL APPROACH

Pages in Study: 84 Candidate for the Degree of Master of Science

Major Field: Human Development and Family Science

Scope and Method of Study: The purpose of this study was to teach fire safety concepts (recognize the firefighter as a helper and stay away from hot things that hurt) to children with developmental delays. Participants in this study included 14 Oklahoma preschoolers (ages three to six) enrolled in two central Oklahoma special education classrooms. All students were categorized by their school psychologist as having a developmental delay. Six of the participants were also categorized as Deaf/Hearing Impaired. An adapted fire safety curriculum was implemented in the students' classrooms for 10 days. Students scores on a pre- and post-test assessing their fire safety knowledge along with students' occurrences of reflective dialogue were recorded and coded to test the hypotheses.

Findings and Conclusions: Participants did demonstrate increased knowledge of the fire safety concepts presented. Participants from Classroom Two evidenced significant increases in their reflective dialogue of both concepts presented. Confounding variables, such as excessive absenteeism and a wide range of expressive language capacity were evident and are best explained through discussion of the sociocultural environment represented in both student characteristics and classroom variables.

ADVISER'S APPROVAL: _____