

EVALUATING THE FIRE/LIFE SAFETY CURRICULUM

Leading Community Risk Reduction

Evaluating the fire/life safety curriculum of the city of Worcester Head Start program.

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Abstract

Pre-school children of low-income families are at high risk for fire injury and death. The purpose of this research is to evaluate the fire/life safety curriculum and instructional methods used in the Worcester Head Start program. Research questions include evaluating what programs and methods are currently used; what teaching methods are best suited to the demographics; what alternative programs and methods are available; and what role should the Worcester Fire Department play in public education.

Using descriptive research methods, a literature review, observations, interviews and a survey were employed to find that the current teaching methods are adequate, but an updated all-risk injury prevention curriculum is preferable. It's recommended that the Worcester fire department support a comprehensive public education agenda.

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Introduction

In its landmark publication *America Burning*, The National Commission on Fire Prevention and Control (1973, p.109) concluded that, “Habits of fire safety are best instilled during the years of childhood, especially since youngsters are particularly prone to fire accidents.” These accidents, including fire deaths among children under the age of 5-years old, are staggering. According to Hall (2004a, p.2), “Based on 1995-1999 experience, children under the age of 5 are twice as likely to die in a home fire as the average person.” In an urban environment the situation is even more compelling, “Virtually every study of socioeconomic characteristics has shown that lower levels of income are either directly or indirectly tied to an increased risk of fire” (Federal Emergency Management Agency [FEMA], 1997, p.2).

One core function of all fire service organizations is a comprehensive fire prevention program and public fire and life safety education programs are a critical component (Crawford, 2002). Some fire departments have embraced fire and life safety education efforts, while others have lagged behind or ignored the significance of its potential impact; the city of Worcester Fire Department unfortunately falls into the latter category. Compton and Granito (2002, p. 50) summarize the scope of the problem, “Despite great strides since 1973... public fire and life safety education in most fire service systems remains chronically understaffed and underfunded.” The risk factors cited previously, namely age and low socioeconomic status are indicative of both the urban setting of Worcester Massachusetts and the clientele of the Head Start early childhood education program. This correlation creates a focused environment from which to research the impact of fire and life safety education efforts.

Therefore, the research problem to be explored is that pre-school children of low-income households, those with correlative eligibility for the federal Head Start program, are at high-risk

for death and injury from fire due to socio-economic variables. The purpose of this research effort is to evaluate the efficacy of the current fire and life safety curriculum and corresponding teaching methodologies utilized within the city of Worcester Child Development Head Start program. The following research questions will be investigated utilizing the descriptive research method:

1. What fire and life safety curriculum and corresponding instructional methodologies are currently in use by the Worcester Child Development Head Start program?
2. What instructional methodologies are best suited to the Head Start demographics for this type of curriculum?
3. What alternative programs and/or instructional methods are available that might supplement or replace the existing curriculum?
4. What role can the Worcester Fire department play in the educational/instructional development of Head Start children?

Background and Significance

The seriousness of the problem is simply stated by Hall (2004a, p. i), “The very old and the very young are at highest risk of death from home fires”; statistical analysis of more than 25 years confirms that children in the age group 5 years and under die as a result of fire at a rate of twice the national average. The city of Worcester has had five fire related fatalities in this age group from 1986 to 2005 according to the Captain William C. Metterville, Commander of the Worcester Fire Investigation Unit (personal communication, September 1, 2005). In Massachusetts the fire death rate for that age group continues to trend lower than national averages. According to the Commonwealth of Massachusetts Department of Fire Services (DFS)

annual report (2003) there were 61 total fire related fatalities, of which four were children under the age of eighteen; all four of those were under the age of five, representing 7% of the total fire deaths for that year. According to Hall (2004a), the decrease in that age group represents a national shift from 18% to 13% of total fire deaths from 1980 to 1999. Worcester's five fire deaths represent approximately 11% over the 20 year time frame, slightly below the national average, but above the statewide average (W.C. Metterville, personal communication, September 1, 2005). Any decrease in death rates is of course positive; however statistically this still represents a risk index rate of 1.93 for children 5 and under which is nearly double the national average (Hall, 2004a).

The city of Worcester Massachusetts Fire Department services a population of 172, 648 people according to United States census statistics for the year 2000; of which 6.5% are persons under the age of 5 years old (United States Census Bureau, 2001). The same census data shows that 17.9% of Worcester's population is categorized as "persons below poverty" as compared to 9.3% for the state of Massachusetts and 12.4% nationally. Hall (2004b) considers poverty as one of three highly correlative factors with regard to fire death rates (education and smoking are the others); and together poverty and education are highly correlative with each other. Other factors such as race and age of housing tend to be poor indicators when analyzed independently, however when coupled with education and poverty their correlation becomes significant. Despite Worcester's lower than average occurrence of fatalities in this age group over the past 20 years, all the indicative factors are in place for a tragedy to occur.

The Worcester Fire Department enjoys a position as a community representative on the Worcester Child Development Head Start (WCDHS) program's Policy Council; an oversight committee which guides the program's operation. My affiliation with the program began with an

appointment to that body three years ago. The fire service's connection with young children has a long and storied tradition both in Worcester and across the country; beginning with the innocent Norman Rockwell type childhood fascination with sirens, fire trucks and visits to the local fire station. Unfortunately, the fire service relationship can come directly to the doorstep of many young children when their family experiences a fire in their home; most often in the homes of less fortunate, impoverished children. When framing the fire death risk problem in terms of past, present and future, the import of this project is to bolster the former relationship and reduce the latter through early educational efforts focused on the concept of family involvement.

Fire and life safety education are an integral component of the overall United States Fire Administration's Operational Objective to reduce the loss of life from fire in any age group, but especially in the group including children 14 years old and below (United States Fire Administration [USFA], 2004). Crawford (2002, p.69) says, "Public fire and life safety education efforts are necessary if the fire service is to have any significant impact on... loss statistics." The concept of reducing fire death losses in all age groups is also a central theme of the National Fire Academy's course *Leading Community Risk Reduction*. Further, this course specifically addresses the impact poverty has on potential risk. In the course introduction, the Student manual (FEMA, 2004) emphatically states, "Risk is based on social and economic issues".

The foundational objective of this research project is to discern areas of improvement in the existing fire and life safety curriculum being offered to a significantly vulnerable population, with the intent of reducing the impact of identifiable risk factors. By focusing on an existing high-risk population base, i.e. those with Head Start eligibility, a direct impact can be made on those most in need of intervention.

Utilizing the descriptive research method to identify the current state of fire and life safety education both in the WCDHS program and nationally, this research will focus on ascertaining more current curricula and related developmentally appropriate instructional methodologies that will augment or replace the program currently being utilized in the classroom.

Literature Review

The premise of this research is not unique, Warger (1988, p. vii) wrote, “ Questions about the overall effectiveness of early childhood programs have given way to those focusing on the effectiveness of specific types of curriculum and teaching practices.” The questions being investigated in this research are directed toward that end as well, with an emphasis on fire and life safety education. The first research question asks: What fire and life safety curriculum and corresponding instructional methodologies are currently in use by the Worcester Child Development Head Start program? The WCDHS program has been utilizing the National Fire Protection Association’s (NFPA) *Learn Not to Burn Preschool Program* as its primary fire and life safety curriculum, a practice that began less than ten years ago. The program is generally introduced in the classroom beginning early in October to coincide with National Fire Prevention week, and then reinforced throughout the school year (J. Cox, personal communication, October 4, 2005).

The Learn Not to Burn curriculum was first introduced over 25 years ago in 1979. It is a multi-level program targeting children from preschool through the eighth grade, using a cumulative learning approach. The National Association for the Education of Young Children (NAEYC), our nation’s largest early childhood education professional organization states, “Development occurs in a relatively orderly sequence, with later abilities, skills, and knowledge

building on those already acquired” (Bredekamp & Copple, 1997, p. 10). Berk (1999) describes this cumulative effect as a continuous process of development whereby new skills are added to a previously existing knowledge base, as opposed to a discontinuous process where skills are acquired at specific stages of cognitive growth. There is very little dispute among theorist about the cumulative effect of learning, most of the controversy centers around *how* the knowledge is acquired.

The field of child development research is replete with various theories of exactly how children learn and develop skill sets. Studies by Bredekamp & Copple (1997) and Henniger (2002) describe theorists as either behaviorist, believing in the predominance of environmental factors or maturationists, focusing on heredity as the most dominant factor in learning. Within this same context, Berk (1999) identifies three over-riding views that summarize the debate surrounding child development theories; continuous versus discontinuous (see above), organismic versus mechanistic, and nature versus nurture; the latter two views are more widely debated. The organismic theory is predicated on the idea that children have an innate psychological makeup which guides development; whereas the mechanistic theory summarizes that the child is a “passive reactor to environmental inputs” (p.6). The nature versus nurture debate is a similar argument as to whether genetics or the environment is most influential in a child’s development and behavior.

Child development theorists are characterized within these contexts as well. Noted researchers such as Lev Vygotsky (1896-1934), Erik Erikson (1902-1994), Jean Piaget (1896-1980) and Urie Bronfenbrenner (1917-) are recognized as the influential theorist in the behaviorist realm.. Others such as Arnold Gesell (1880-1961), Maria Montessori (1870-1952),

and Howard Gardner (1943 -) are credited with much of the work done in the area of innate intelligence(s); that is the maturationist's point of view (Berk, 1999; Henniger, 2002).

None of these theorists are exclusive in their beliefs; rather they are more inclined toward one or the other theory as being more influential in the process of cognitive development. The NAEYC believes that, "human beings are products of both heredity *and* environment and these forces are interrelated" (Bredekamp & Copple, 1997, p. 13). Berk (1999) describes this as a "dynamic systems perspective" combining the mind and body as well as the physical and social worlds as a dynamic integrated system.

The *Learn Not to Burn* curriculum also recognizes this philosophy stating that: "Young people learn in several ways. Teach lessons that help children learn through what they see, hear and touch, as well as how they move" (NFPA, 1991, p. 7). In this respect, the curriculum is flexible enough to employ segments of both schools of thought, behaviorist and maturationist. The instructional methods most used to deliver the *Learn Not to Burn* lessons draw directly from cues in the environment (behaviorist), such as the auditory connection in lesson six which directs a child to perform particular behaviors when they recognize the sound of the smoke detector/alarm (NFPA). Although the curriculum is significantly behavioral, in that the teacher leads a short discussion, and then initiates an action or actions to correspond with a particular stimulus, a method called direct instruction (Warger, 1998); connections can also be made within the NFPA lesson plans with the maturationist theory of developmental appropriateness (Henniger, 2002). By creating play centers for children to explore passively like mock fire stations, the child is free to draw from within his/her own conceptions to create connections to the outside world (Gardner, 1993).

The second research question asks; “What instructional methodologies are best suited to the Head Start demographics for this type of curriculum?” In order to identify suitable methodologies for the target audience, the group must be defined. The most significant demographic factors for this group are age and socioeconomic status. The age group relative to this study includes children age five and under, generally those children found in a kindergarten or pre-school setting. Berk (1999, p.76) defines socioeconomic status (SES) as follows:

A measurement of a family’s social position and economic well-being that combines three interrelated, but not completely over-lapping, variables: (1) years of education and (2) the prestige of skill required by one’s job, both of which measure social status; and (3) income, which measures economic status.

Not only do these same dynamics definitively increase the child’s risk of death or injury from fire as presented earlier; they are also significant in terms of the course of child development and related instructional methods (Berk, 1999; Bredekamp & Copple 1997; Henniger, 2002). Correspondingly, both of these factors determine eligibility for the Head Start program. To be suitable for Head Start services a child must be at least three years old by the date used by the local public school board to establish age eligibility; and at least 90% of the children enrolled must be from low-income families (U.S. Department of Health and Human Services [USDHHS], 2004). Head Start defines low-income by utilizing the current DHHS poverty guidelines (see Appendix A).

According to the latest internal report, over the course of the academic year 2004-2005, the WCDHS program serviced 900 children. Over ninety-one percent of the families were income eligible; with 332 three-year old children enrolled, accounting for 36.89% and 568 four-year old children equaling 63.11% (Worcester Child Development Head Start [WCDHS], 2005).

Analogous to Berks' first socioeconomic variable with regard to social status(education), the same report (WCDHS) states that 27.12 % of parents have less than a high school education; 42.03 % have a high school diploma or GED; 22.24 % have some college or vocational education including Associate degree; and only 8.61% have a Bachelor's degree or higher. Given the predominance of low-income status and relatively low education level of the parents, a presumption of equally low prestige job skills is not improbable. These same factors identified earlier, poverty and education, are significant relative to risk.

One other highly correlative risk factor coupled with poverty rates and education levels is smoking. "The overall prevalence of smoking declines with increasing years of education" (American Lung Association [ALA], 2004). According to Hall (2004b), 22% of the variation in fire death rates between states is predicated on smoking trends. States with higher percentages in risk factors like smoking tend to have higher fire death rates. The ALA report, indicates that in 2001 the national average smoking rate for people age 25 and older with 12 years of education or less was 28% to 30%; for those in the age range of 18 to 24 years the rate was significantly higher at 30 % for females and 38% for males. In that same year, Massachusetts recorded an overall smoking rate of 19.7% of adults 18 years and older. The Centers for Disease Control and Prevention (2004), reported similar findings with regard to smoking and education for 2002, and also reported a nearly 33% smoking rate for people considered to be below the poverty level, ten percentage points higher than the population considered at or above the poverty level.

Warger (1988, p. 74) states emphatically, "The cycle of failure begins early for disadvantaged students." The influence of socio-economic status on cognitive and language development can have an affect as early as age two (Berk, 1999). Henniger (2002, p. 121) explains that, "Poverty, homelessness, child abuse and poor parenting are all key factors that can

cause children to be at risk in their development..” Understanding the characteristics of age appropriate instructional methodology and the socioeconomic dynamics of the child’s home environment helps to shape the ways in which curriculum is developed and offered. “Head Starts....targeting preschoolers from low-income communities, were chosen because the Learn Not to Burn Foundation’s mission was to reduce fire deaths and injuries among those at highest risk” (Gamache, Porth, & Diment, 2001).

For a curriculum such as *Learn Not to Burn* the “projects approach” is well suited to meet the needs of Head Start children. The projects approach is a developmentally appropriate instructional approach which focuses on learning by doing; usually in a group setting. Helm & Katz (2001, p.1) describe the concept as; “A project is an in-depth investigation of a topic worth learning about. The key feature of a project is that it is a research effort deliberately focused on finding answers to questions posed about a topic.” Bredekamp & Copple (1997) also conclude that early childhood teachers should utilize well-researched teaching methods such as project work

A project is instituted in three logical phases over time. Researchers vary in the terminology used to describe the phases; however the context of the phases is consistent. The first phase of the project is the planning phase, as described by Warger (1988). Henniger (2001) simply calls this phase “getting started”, a process where teachers and students discuss the elements and refine and develop plans for the project. The second phase or “field work” is where children gather information and make observations about the subject, perhaps creating images of what they have discovered. Finally, the last phase involves summarizing the research or “culminating”. In this phase children may engage in role-playing or other activities that

review what they have discovered through their efforts, including presenting the materials to other students (Gardner, 1993; Helm & Katz, 2001).

Learn Not to Burn is divided into eight fire safety behaviors that the child must explore and develop with “emphasis on specific fire safety knowledge and actions for the children to learn” (NFPA, 1991, p. 5). The sections include: 1) Stay away from hot things. 2) Tell a grown-up when you find matches or lighters. 3) Stop, drop, and roll if your clothes catch on fire. 4) Cool a burn. 5) Crawl low under smoke. 6) Know the sound of a smoke detector alarm. 7) Practice an escape plan. 8) Recognize the firefighter as a helper. Each unit or section includes objectives which include requisites of knowledge and action. The curriculum includes supplemental information to bolster the instructor’s knowledge base along with a prepared lesson plan. Additionally, each unit contains a sing-along song for the children to learn. Each of the units can be developed by the students into a “project” for them to explore and develop mastery. Gardner (1993) describes the process as being “scaffolded”; that is an open interpretation with guidance for the student to follow.

Another method of teaching the curriculum can come in the form of direct instruction. This is a more traditional approach based in the behaviorist theory, a considerably different approach than the developmentally appropriate method (Henniger, 2002). Warger (1998) believes that economically disadvantaged children can benefit from the direct instruction method in combination with developmentally appropriate experiences. She states (p.73), “While developmental activities meet some of the immediate needs of economically disadvantaged children, effective academic instruction anticipates the children’s needs for competence and confidence in later grades.” The assertion is that failure begins early in the life of a child in poverty and a more direct method of intervention/instruction is needed because of the lack of

parental participation (Berk, 1999; Bredekamp & Copple, 1997; Warger). Direct instruction involves the teacher sharing information with students in small and large group settings and eliciting feedback from them. The approach uses “positive reinforcement, punishment and ignoring as primary tools of management and discipline” (Henniger, 2002, p. 78).

Many of the *Learn Not to Burn* lesson plans can be taught using direct instruction. Sharon Gamache, Executive Director of the NFPA’s Learn Not to Burn Foundation groups the eight behaviors of the program into three sub-fields, prevention, reaction and recognition (personal communication, October 14, 2005). The first two behaviors in the curriculum concentrate on prevention, and the direct instruction technique of group discussions applies well to the units that involve prevention activities, stay away from hot things that can hurt, and tell a grown-up when you find matches or a lighter. The concepts that involve physical activities or reaction such as stop, drop and roll, cool a burn, and stay low and go will require the instructor to specifically direct student’s bodily kinesthetics. This is often accomplished by breaking the learning task down into small components in a predefined sequence of events and facilitating guided practice of the new skills (Henniger, 2002; Warger, 1998). The final field, recognition, where children are exposed to entirely new and often times frightening concepts like recognizing the firefighter as a helper while in turnout gear, knowing the sound of the smoke detector alarm , and practicing an escape plan, are more curriculum driven by necessity, and therefore more amenable to direct instruction (Kiurski 1999). Warger describes the process whereby a teacher delivers a brief explanation and then asks a series of questions relative to the subject; these questions are found in the lesson plan and supplemented by the instructor.

The third research question centers on the availability of alternative curricula and instructional methodologies to supplement or replace the existing content. Exploration of this

subject identifies numerous programs that have been developed at both the national and local level. Some programs are fire safety specific such as FEMA's collaboration with the Children's Television Network to create, *Sesame Street Fire Safety Station*, and BIC Corporation's, *Play safe! Be safe!* fire safety education kit. NFPA's *Risk Watch* safety program was finalized in 1998 and represents the next logical progression, a comprehensive "life" safety/ injury reduction curriculum. Only those entities that have the ability to mass produce and distribute materials and have affiliation with recognized educational entities will be explored.

Locally developed programs often include the curriculum content of the national programs, enhanced with features to support community based objectives. These initiatives are excellent supplements to the more recognized courses, but often lack the professional development and field testing criteria needed to insure age appropriateness and educational reliability. With those known limitations, locally developed curricula are not included for analysis.

The *Learn Not to Burn* program is a fire safety specific curriculum, as are both *Sesame Street Fire Safety Station*, and *Play safe! Be Safe!*. The *Sesame Street* curriculum is nearly identical in content to that of *Learn Not to Burn*, with the infusion of recognizable characters from the popular children's program. The utilization of friendly familiar characters to disseminate instruction to children is popular, and can have positive effects. Henniger believes, "Educational programs like *Sesame Street* are receiving good reports in terms of their impact" (2002, p. 481). The *Sesame Street* program is built around two principle messages, "Hot Things Burn and Get Out and Stay Out" which are essential tools for preschool children (FEMA, 1996). Emphasis on these two essential messages are linked directly to the accompanying ideas in each section; for example, under the Hot Things Burn umbrella are the concepts of, matches and

lighters are for grown-ups, cool a burn, and if your clothes catch on fire - stop, drop, and roll. The Get Out and Stay Out section includes, a smoke detector warns you about fire, firefighters rescue people and put out fires, and plan and practice fire drills (FEMA, 1996). The *Sesame Street* program, like *Learn Not to Burn* is predicated around molding behavior at an early age and reinforcing the message as the child grows, and generally offers no significant change or improvement to the latter curriculum beyond the recognizable characters that deliver the message. The instructional methodologies used to deliver the materials are identical; one clear advantage however to the *Sesame Street* program is it is available free of charge from FEMA.

Play Safe! Be Safe! is an initiative that was formed in the 1980's when local firefighter's in the Rochester, New York area sought help with their juvenile fire problem. According to the program manager of the Fireproof Children Company, the firefighters enlisted the services of a prominent expert in the field of child development and psychology, Dr. Robert Cole to identify and develop a comprehensive program to reduce fires among young children. In order to fund the research, a private partnership was created with the BIC corporation (maker of disposable cigarette lighters), eventually resulting in the formation of the Fireproof Children Company, and its *Play Safe! Be Safe!* curriculum (J. Glanton, personal communication, November 8, 2005).

The fundamental message of the *Play Safe! Be Safe!* campaign is similar to that of the previous fire specific programs discussed, focusing on "actions" in two areas: keeping children safe in a fire and preventing fire play . The areas content includes, my friend the firefighter, stop, drop, and roll, crawl low under smoke, go tell a grown-up (Cole, Crandell, & Kourofsky, 2004). The programs educational value can be attested to by its receiving two significant educational awards; first in 1997 an outstanding curriculum award from the NAEYC, and also in 1997 NFPA's Rolf H. Jenson Partners in Public Education award (BIC, n.d.). The elemental focus of

this curriculum is developing the habits of positive actions through direct instruction. Cole et al. conclude that “Teaching actions gives children something they *can* do, not just something they *can’t* -- and is particularly effective in prevention” (p. 17).

According to Fireproof Children, the most significant difference between its program and the others cited is the addition of “workshops” for the teaching staff administered personally by Dr. Cole prior to utilization of *Play Safe! Be Safe!* (J. Glanton, personal communication, November 8, 2005). In order to secure the curriculum and the workshop free of charge, an application process is administered through the BIC Corporation in the form of a grant. Each year 8 workshops are underwritten by BIC, seven in the U.S. and one in Canada (BIC, n.d.). The community applying for the grant must ensure an attendance of 200 or more for instruction, and demonstrate a commitment to fire safety education (Fireproof Children, n.d.). The use of professional development workshops is widely accepted as a critical component to maintaining sound education programs (Bredenkamp & Copple, (1997).

NFPA’s *Risk Watch* program was developed in cooperation with Lowe’s Home Safety Council and represents the first comprehensive injury prevention curriculum available for use in schools from preschool through grade eight (NFPA, 1998). The *Risk Watch* curriculum for preschoolers is divided into eight risk areas; each represented by an icon which serves as a visual cue for each module lesson. The eight risk areas are: 1) Motor Vehicle safety. 2) Fire & Burn prevention 3) Choking, Suffocation, and Strangulation prevention. 4) Poisoning prevention. 5) Falls prevention 6) Firearms Injury prevention 7) Bike and Pedestrian Safety 8) Water safety.

The expansion of the curriculum to include subjects beyond fire safety is one that has gained national support. Fire departments and school districts across the U.S. and Canada are expanding their programs to include a wider field of community representatives to coincide with

the broader aspect of total injury prevention (Crawford, 2002; Dubose, 1994). The state of Delaware has adopted legislation in the form of House Bill 57 which mandates that all public school children kindergarten through grade 6 must receive fire safety education; and *Risk Watch* is the recommended curriculum to fulfill the requirements of the legislation (Nemours, 2005; NFPA 1998).

The goal of a program like *Risk Watch* is to change behaviors with regard to injuries to children. An important aspect of that change is clarifying the fact that injuries are not “accidents”; that childhood injuries are predictable and preventable (Dubose, 1994; Hall 2005; NFPA 1998; U.S. Department of Health and Human Services {USDHHS}, 2000). According to Dubose (1994, p. 3), “While the process of preventing childhood injuries has many parts, the effective use of education is the fabric that brings it all together.” This assertion is shared by the American Academy of Pediatrics which references *Risk Watch* as “a model injury prevention program designed for the classroom” (Health, Mental Health, 2004).

Risk Watch can be taught in 1-hour modules over a period of nine weeks, or it can be expanded to be taught over the course of an academic year as a 20-hour program; introducing one module each month. The program can also be structured independently of these recommendations at the discretion of the instructor using an experiential program; that is a student-centered approach similar to the projects approach discussed previously (Appy & Kirtley, 1998). Most of the lesson plans call for a short introduction of materials by the teacher, followed by various activities to support the learning objectives. This type of lesson planning is consistent with the direct instruction methodology as described by Warger (1988, p. 89),

The teacher gives a brief explanation, possibly models a skill, and then asks a series of quick questions to make sure the students understand the explanation. The teacher moves

immediately to guided practice, again with frequent questions that prompt the steps that constitute the skill or strategy.

Delivery of the *Risk Watch* program in this manner is consistent with Warger's earlier recommendation for teaching methodologies for low-income children.

NFPA's expansion of the *Learn Not to Burn* program to the more comprehensive injury prevention program *Risk Watch* is following a national trend (Crawford, 2002). The Fireproof Children Company has also moved beyond the fire specific realm to include a new program called Prevention First; incorporating childhood injury prevention into its curriculum (J. Glanton, personal communication, November 8, 2005). Head Start itself has embraced this same concept as part of their efforts to keep children safe from harm, both in school and beyond its doors (USDHHS, 2000). Other prominent national organizations are promoting total injury prevention as the new educational standard for children, such as the American Academy of Pediatrics, the Centers for Disease Control's National Center for Injury Prevention and Control, the National KIDS SAFE campaign, the National Safety Council, and the United States Fire Administration to name just a few (Collins, 1998; Fireproof Children, n.d.). This trend is clearly a major influence in establishing a complete fire/life safety program for the future.

The final research question involves defining what role the Worcester Fire Department can play in the educational development of Head Start children. The significance of what role any fire department can play in the reduction of fire deaths and injuries is well established, and the Worcester Fire Department is no exception. *America Burning* established early on that no other measure taken by the fire service is more important than its role in educating the public about fire (The National Commission on Fire Prevention and Control, 1973). That declaration was reconfirmed in 1987 when the national fire service once again convened experts from

around the country and issued *America Burning: Revisited*; which issued several more key recommendations for public education initiatives (USFA, 1990). Most recently, *America at risk*, (FEMA, 2000) states emphatically that the fire service should foster and develop public and private sector partnerships utilizing existing resources, such as the schools et al. to target high-risk areas for public education and prevention efforts.

Compton & Granito (2002) contend that progressive fire service managers support a strong public education program within the fire department, and recognize the necessity of coalition building in order to be successful. Their research and others like Crawford (2002), further acknowledges the benefit of injury prevention programs such as *Risk Watch*, as one part of a broader picture addressing public health epidemic. A fire department which helps to deliver a carefully designed public education program can realize significant reductions in fires and related fire injuries and deaths (Goodson & Sneed, 1998).

The Worcester Fire Department can work toward establishing these same relationships; expanding beyond its current limitations of station visits. “The fire service needs to communicate with other groups in the jurisdiction to promote fire safety” (USFA, 1990). Providing more resources in the classroom in the form of dedicated public educators to supplement fire safety presentations is one facet that has proven invaluable in reinforcement and retention of materials (Crawford, 2002). Undoubtedly, the importance of a strong public education component within the fire department table of organization is essential to truly promote fire safety and reduce injuries and death.

In order for this type of initiative to occur in the WFD, the department will need to shift its current paradigm from strictly a suppression based service, to a broader community services approach, “without compromising the high standards of fire and emergency response” (Compton

& Granito, 2002, p. 51). Restructuring of existing resources and committing to an overall culture of reducing the community risk will require organizational equity; that is support from the rank and file. Organizational equity is a difficult mountain to climb, and will require a motivated champion to promote the requisite change in attitude to be successful (FEMA, 2004). The history of the WFD is not one that embraces change easily, “One of our core level issues is narrow-mindedness or parochialism” (Sullivan, 2004). Crawford (2002) believes that there is a national trend in the establishment of intra-governmental coalitions, and that programs like *Risk Watch* are models for how effective these coalitions can be.

Procedures

The procedures used for this research followed those commonly utilized for the descriptive research method; describing the current state of a subject. The process employed the following elements, an extensive literature review, personal observations, interviews with subject matter experts, and a comprehensive survey instrument. Each of these elements was undertaken during specific time periods to correspond with the normal institution of fire/life safety educational programs at the Head Start centers.

Literature review

The literature review was initiated at the National Emergency Training Center’s Learning Resource Center during the final week of class for Leading Community Risk Reduction. Several key pieces of information were gathered at that time which formed the basis from which to expand the review. Two local college library resources, as well as the researcher’s personal cache of educational books augmented the search for relevant texts in the areas of curriculum, child development and instructional methodology. The review also included use of the considerable resources available from the internet. Subject specific searches utilizing common

search engines provided ample reference sources. The literature review including some of the personal communications were initiated mainly during the summer vacation period, as school was not in session to conduct classroom observations during that period.

Observations

The process of classroom observation was critical to the analysis of the first research question in order to determine what instructional methodologies were currently being utilized to present the existing curriculum *Learn Not to Burn*. The Head Start program introduces the fire safety curriculum to the students to correspond with Fire Prevention week in early October. Classroom visits with subsequent observations and interactions were conducted at three different Head Start centers; the Millbury Street center, the Vernon Street center and the Lee Street center. A total of 6 classrooms were observed for various lengths of time dependent upon the instructors schedule for the presentation of the curriculum. In addition, the Lee Street center conducted two general assemblies for the unit on recognizing the firefighter as a helper, which included all children at the center that day.

Overall the instructors were not restricted by the curriculum's sequential design, but were often required to make changes to lesson plan. Teachers selected the most appropriate aspects of the curriculum to present based on their assessment of the children's ability to comprehend the subject matter, and their own ability to recreate the lesson plan within the constraints of their particular settings. For example, the lesson plan for "stay away from hot things that can hurt" calls for the children to walk through the child care center environment and identify as many hot and not-hot things as possible. Teachers remarked that they were forced to modify the lesson to identifying pictures, given the fact that child care centers by nature restrict "hot" things from being accessible to children. The pictures used in one case were also limiting because of the

demographics of the group; whereby some children could not identify items because of unfamiliarity.

Another remarkable restriction to the curriculum as presented was its placement near the beginning of the start of the school year to correspond with the national Fire Prevention week initiative. The curriculum is ideally taught over the course of an entire year with occasional reinforcement of prior lessons learned. However, during the process of observation, teachers were candid about their inability to return to the program in detail once the initial offering was complete. The teachers expressed a desire to follow that suggested design, but were concerned that some aspects of the curriculum were too advanced to be presented at the early stages of the school year, and therefore were glossed over or not taught at all. Lesson six, “know the sound of the smoke detector/ alarm” was practical for the school’s mandatory fire drills, but was not offered at any center with regard to the children’s home during any classroom session.

Presumably, the lesson would have some “carry-over” affects with regard to home smoke detectors. Lesson seven, “Practice an escape plan” had similar utility to lesson six; it was practiced with regard to school, but not translated to the home environment. (See Appendix C)

Classroom observation at the Millbury Street occurred in the classroom of Mrs. Ghosh. There were approximately 15 children aged three and four of various ethnic and racial backgrounds. The first observed venture was characterized as a “circle” activity, children sitting in a circle, which utilized the direct instruction methodology. The teacher provided a preliminary introduction to the activity which centered on the “stay away from hot things that can hurt” lesson and the props that would be used. Each child was given two circles fashioned from construction paper approximately four inches in diameter; one was colored blue to represent “cold”, and the other red to represent “hot”. Mrs. Ghosh proceeded to display illustrated pictures

of fairly common objects reproduced from the lesson plan, and supplemented them with additional pictures. The children were asked to identify the hot and cool objects and provide a brief explanation of “why” the object could be harmful, or conversely “why not”.

A similar activity was observed at the Vernon Street center in the classroom of Ms. Burnieka. Seventeen children were occupied in a similar circle activity placing pictures that were identified as either hot or cold into an appropriately colored coffee can. The same direct instruction method was utilized as previously stated, with the slightly more physically engaging technique of “placing” the object in the can. The addition of this activity allowed the child to move within the context of the circle, and “show” prowess in front of his or her peers; a critical self-esteem component. This lesson lasted about five to eight minutes, and was followed immediately by what the instructor described as a “critical thinking” activity which built on the work completed the previous day; much like that of a projects approach lesson. In the earlier session, the children had been tasked with placing the pictures presented on a larger paper display under the heading “H” or “C”. The current lesson in critical thinking then tasked the children to explain why they had made the earlier choices. The current classroom session ended with a sing-along utilizing the cassette tape provided with the curriculum, “*Don’t touch hot things*”.

At the Lee Street center, two additional lessons were introduced along with the previously mentioned “hot things” lesson; “tell a grown-up when you find matches or a lighter” and “crawl low under smoke”. To be forthright, lighters and matches were pictured in the “hot things” lessons and identified as adult tools that should never be in the hands of children; in effect combining the lessons in previous sessions. The difference in this center’s approach was

the separation of the behaviors as distinct learning objectives to be mastered. It was extremely limited however, involving a hasty discussion of the subject.

The “crawl low under smoke” activity that this researcher observed was a chaotic attempt at the lesson. The children were not formally engaged in any discernable discussion or explanation prior to the physical activity. Two classrooms were combined in the normal recess “activity room” during a time usually reserved for play. Two instructional personnel held open a sheet for interested children to crawl under. Very few of the approximately 30 children participated and no instruction was observed during this session.

The final aspect of observation involved direct interaction with the children utilizing the *Learn Not to Burn* program’s “recognize the firefighter as a helper” lesson. This lesson was conducted at every center in both the classroom and general assembly settings. Strict adherence to the lesson plan was observed to insure the accuracy of the observation. In all cases the reaction to the presence of a community helper was positive. The center coordinators and instructional staff were enthusiastic and embraced the dynamic aspects of having a “real” firefighter augment the learning experience. The children displayed a generally positive reaction to the presence of the community helper, but were distracted by the researcher’s presence during the observation of teacher led classroom activities. With the exception of a few children who experienced some limited visible displeasure (crying) with the firefighter in full turnout gear, a high level of enthusiasm, cooperation and cognition was observed. The children participated eagerly in the process and reacted positively to the lesson. Several children approached, and wanted to give “high-fives”, or touch and explore the firefighters gear.

These observations were designed to gather pertinent information with regard to research questions one and five. Observing, and participating in the actual execution of the current

curriculum during the typical implementation period was central to insure normalcy and that predisposition was limited.

Interviews

Several interviews were conducted in an attempt to glean insight into the needs of the instructors, center coordinators and Head Start administration with regard to fire/life safety education. Telephone interviews were also conducted with noteworthy industry experts in the fields of child development, and fire/life safety curriculum. Key aspects of those interviews are reported here which highlight those areas of inquiry pertinent to the research.

The first interview was conducted at the earliest stages of the process with the Worcester Child Development Head Start interim program director Patricia Clancy, and assistant director Janet Boudreau to determine the necessity and value of the project. Curriculum specialist Elizabeth Shaunessy was invited to participate and lend her expertise to the discussion. The discussion detailed the elements of the research and a tentative timeline was discussed. It was determined that the project had merit for both the Head Start program and the Worcester Fire Department, and a formal letter of request was drafted to officially seek permission to move forward with the process administratively. (see Appendix B).

Several follow-up meetings were conducted with the Head Start staff to facilitate the classroom visits, distribute of the survey instrument, and review the alternative curricula identified by the researcher. The interviews of center coordinators and individual teachers took place in conjunction with the center/classroom visits held in early October. Center coordinators were presented with the alternative lessons and asked to assess the viability of each with regard to their needs. Classroom teachers were interviewed about the educational aspects of the current *Learn Not to Burn* program.

Other interviews included a telephone conversation with Sharon Gamache, of NFPA's Center for High Risk Outreach programs and executive director of the Learn Not to Burn foundation. Ms. Gamache served as an editor and project manager in the creation of the *Learn Not to Burn* curriculum. Questions directed to this interviewee were designed to provide insight into the educational rationale upon which the program was developed. The final telephone interview was held with Jennifer Glanton, program manager for the Fireproof Children Company. The interview questions centered on the programs inception, rationale and added value.

Head Start staff interviews

The center coordinators and the administrative staff of the Worcester Child Development Head Start program were consistent in their assessment of the need to expand the current curriculum to include an "all-risk" injury prevention program such as that presented in the *Risk Watch* program. The socio-economic reality of the children in Head Start was an overriding factor upon which the consensus of opinion was predicated. The staff also was eager to expand the community partnerships with agencies like the Worcester Fire Department to augment the classroom experience.

The teaching staff interviews which centered on the current curriculum were also fairly uniform. The teachers expressed concern over the timing of the implementation of the program; feeling that it was too early in the school year to introduce many of the more complex lessons such as the exit drill in the home. The program's content was determined to be appropriate in scope, but the lesson plans were considered to be only marginally useful. Teachers cited the limitations of the classroom environment as one factor in not being able to implement the full curriculum. The instructional staff was very receptive to the inclusion of the "community helper"

in the classroom. The staff believed that the concept of recognizing the firefighter as a helper was greatly enhanced by the physical presence of a firefighter with full gear to add realism and answer inquiries from the children.

Industry experts' interviews

The discussion conducted with Sharon Gamache focused on the educational rationale upon which the *Learn Not to Burn* project was built. Through their process of studying trends and data analysis, NFPA recognized the need for some method of intervention to curtail the escalating death and injury rate among children. A partnership was formed between NFPA and the Continental Corporation Foundation to underwrite the development and pilot testing of the program; and the original pilot test was conducted in the city of Worcester, MA at the Frances L. Hiatt Child Care Center. NFPA staff and child development experts created a program focused on increasing a child's fire safety awareness and developing the necessary skills to react appropriately when faced with a fire related threat. The lesson plans are intended to develop and reinforce the eight key fire safety behaviors identified earlier. Ms. Gamache sorted the behaviors into three distinct areas, prevention, reaction, and recognition.

The instructional methodology best suited in the delivery of *Learn Not to Burn* was not specific. Different aspects of the lessons plans lend themselves to utilization of various methodologies according to Ms. Gamache. Because the curriculum serves a universal audience, it is designed to be amenable to interpretation and utility by the instructor. As long as the fundamental message is delivered in a non-threatening manner, the methodology of instruction is left to discretion of the local entity.

The final interview was held with Jennifer Glanton of the Fireproof Children Company, the implementation source of BIC's *Play safe! Be safe!* program. The discussion began with an

exploration of the history behind the program as described earlier. The impetus was similar to that of NFPA in that there was local recognition of a growing trend in child related fires in the Rochester, NY area and that some intervention was necessary. Dr. Robert Cole developed the *Play safe Be safe!* program with the backing of the BIC corporation, and began local implementation.

Although the two programs, *Learn Not to Burn* and *Play safe! Be safe!*, have virtually identical educational outcomes, Ms. Glanton outlined two distinct features of their program; personally delivered instructional workshops for the teaching staff by Dr. Cole and, the application and grant process which provides the workshop and the curriculum materials at no cost to the jurisdiction. The instructional emphasis of the workshops is centered on positive actions; limiting if not eliminating negativity from the learning environment. The workshops present specific instructional methodology techniques for implementing the lesson plans, primarily “modeling” which will help to enhance the child’s achievement of appropriate skills. Dr. Cole’s workshop’s cover six topical areas; the frequency of children’s fire play and fire setting, the preschool child’s understanding of fire, teaching preschool children safety skills, fire prevention for preschool children, involving families in fire safety, and the evaluation of the *Play safe! Be safe!* program.

The interviews were designed to augment the literature review materials for research questions two and three. Head Start staff and subject matter experts provide informational analysis of the existing situation. The intimate relationships of the curriculum designers as well as the experiential knowledge of the instructional staff provide realism; and separates theory from practice.

Survey

A survey was developed to assess the children's home environment with regard to fire and life safety; as well as to illicit pertinent information regarding socio-economic variables identified in the research process. The questions were directed to the parents and not the children. The questions were closed-ended multiple choice type to facilitate data collection and remove ambiguity. The fields of inquiry revolved around, fire and life safety competency and household systems, education levels, ethnicity and primary language, smoking and the role of the local fire department in public education. The actual survey, survey results, and the introductory letter to parents can be found in Appendix C.

The survey was distributed through the Parent Involvement Coordinators at each Head Start center site beginning in late September, 2005; prior to the start of Fire Prevention week.. Approximately 770 surveys were distributed to *all* Head Start families. Assistance with translation is an identified concern for the Head Start program which services a diverse clientele that speak in excess of 25 different languages and dialects. Parents who typically experience interpretation problems were encouraged to seek assistance with translation. Internal systems of support are well established for those parents and children to utilize for dissemination of information throughout the school year. This survey instrument was distributed within that system and Parent Involvement Coordinators stressed the importance of the information. With the encouragement and aid of the centers' staff, 261 surveys were completed and returned.

Survey limitations

The survey was sufficiently comprehensive to gather the required information for assessment. It did however have some limitations. Many parents chose to qualify their answers in written form in addition to providing a multiple-choice answer. The majority of the qualified

information was disregarded; other answers were interpreted by the researcher and quantified within the data. The two questions concerning education levels were found to be slightly ambiguous based on the answers garnered, but nonetheless resulted in useful analytical information. Answer choices for racial origin and primary language were found to be somewhat restrictive, despite the fill-in “other” option available.

Definition of terms

Behaviorism -- A school of psychology that confines itself to the study of observable and quantifiable aspects of behavior and excludes subjective phenomena, such as emotions and motives.

Behaviorist -- One who accepts or assumes the point of view of behaviorism.

Developmentally appropriate -- providing an environment and offering content, materials, activities and methodologies that are coordinated with the child’s level of development.

Kinesthetics -- The sense that detects bodily position, weight,, or movement of the muscles, tendons and joints.

Maturationism - An early childhood educational philosophy that sees the child as a growing organism and believes that the role of education is to passively support this growth rather than actively fill the child with information. The idea is that genetic factors play a larger role in development than environmental ones.

Maturationist -- One who accepts and assumes the point of view of Maturationism.

Mechanistic -- Of or relating to the philosophy of mechanism, especially one that tends to explain phenomena only by reference to physical or biological causes.

Organismic -- Of or relating to or belonging to an organism (considered as a whole).

Socioeconomic -- Of or involving both social and economic factors.

Results

Question #1 - What fire/life safety curriculum and corresponding instructional methods are currently in use by the Worcester Child Development Head Start program?

Currently, NFPA's *Learn Not to Burn* curriculum is the most common fire/life safety education program in use by the Worcester Child Development Head Start staff. The instructional staff has recently been presented with the *Sesame Street: Fire Safety Station* course as an alternative; but its use is not yet widespread. The most common instructional methodologies observed were direct instruction and to a lesser extent the project approach.

Question #2 - What instructional methodologies are best suited to the Head Start demographics for this type of curriculum?

Although not distinctly connected to a curriculum "type", instructional methodology is relevant to socioeconomic demographics. It is recommended that the direct instruction methodology is best suited for the identified socioeconomics of most Head Start children. The project approach is also useful as a complimentary method to direct instruction; as an avenue that may suit the individual child development needs of atypical students. The consensus opinion appears to indicate that utilizing a positive approach to the learning environment will foster a more conducive atmosphere for long term behavioral change.

Question #3 - What alternative programs and/or instructional methods are available that might supplement or replace the existing curriculum?

National trends indicate that a more comprehensive "injury prevention" curriculum like NFPA's *Risk Watch* is the most suitable replacement to the current limited focus program. The expanded application represented in the total injury prevention type syllabus allows the instructor greater latitude to utilize diverse methodologies in its presentation. Expansion of the project

approach is more conducive to these lesson plans, as well as the use of “community helpers” to augment instruction.

Question #4 - What role can the Worcester Fire Department play in the educational/instructional development of Head Start children?

The Worcester Fire Department must accept its responsibility as a partner in the educational process of all its citizens with regard to fire/life safety education, and create a dedicated public education section within the department’s Fire Prevention bureau. As a dedicated section, the department’s public education component can commit itself to true partnerships with programs like Head Start. In the process, the department can work to secure funding (in the way of grants) and educational resources to augment the learning environment, as well as providing community educators for identified high-risk groups.

Survey results

The survey results conform to the recognized standard for sampling size. There were 261 surveys returned from an approximate 770 surveys distributed, insuring a 95 percent confidence level in the results. A graphical depiction of the survey results can be found in Appendix C. The first question was introductory in nature and was included to directly connect the parent (survey respondent) to the child or children, and further link both to the Head Start program. Eighty-nine percent of the respondents reported having just one child currently enrolled, with only one respondent indicating more than 2 children.

Questions two and three were designed to assess the degree of fire/life safety knowledge communicated in the child’s household. Parents reported that fully 86.6% of children were not yet instructed in obtaining assistance using the 9-1-1 emergency service number. Over forty-two percent of respondents indicated that they had *never* spoken to their child/children about what to

do in the event of a fire in their home. Interestingly, only 40% of households with two or more children enrolled *had* spoken about what to do in the event of a fire; down from 58% of families with just one child. These two results are indicators of parent/child communication levels.

The next two inquiries, questions four and five were meant to measure the parent's level of fire/life safety knowledge, based on the expected age range of the parents and the most common national educational fire safety initiatives they would have reasonably been exposed to. One such initiative, E.D.I.T.H., or Exit Drills in the Home, another NFPA program that was widely accepted by the fire service public education community, has apparently not caught on with the general public. Almost 94% of those surveyed could not identify the E.D.I.T.H. acronym, even when presented in the context of a fire/life safety questionnaire.

One initiative that has had lasting effects on both children and parents is the "stop, drop, and roll" program. The exciting physical nature of the activity makes a lasting impression, but has shown to dominate the field of fire safety education to the detriment of the "stay, low and go" campaign. Nearly 30% of parents incorrectly indicated the popular "stop, drop and roll" as the proper procedure for themselves and their children when faced with "smoke" in the home. An additional 9% chose a second incorrect response or indicated that they did not know what to do at all.

Questions six and seven are designed to elicit information about the nature and operability of smoke detectors in the child's home, and ascertain the degree of awareness that the parents possess in relation to those devices. Favorably, 94% indicated the presence of working smoke detectors in the home or apartment. This high number is suspect however when correlations to other responses are factored into the equation. Sixty-one percent indicated the

presence of battery operated detectors; 10% are hard-wired; 15% indicated that both types are present and the remaining 14% did not know what type of detector, if any, was present.

The next several questions were intended to draw out socioeconomic information applicable to those indicators previously identified in the research as significant variables. Given that the Head Start admission criterion already presupposes a uniquely high percentage of poverty among the respondents, the next highly indicative factor is education levels. Education levels were divided into three categories; high school, college, and graduate school (see survey limitations). Respondents were also asked to indicate whether or not they had graduated from their highest education level. In total, 59% of the respondents identified high school as their highest education level; with a 64% graduation rate. Almost 34% had attended an undergraduate college with 70% of those achieving an associate or bachelors degree. Nineteen people indicated that they had attended graduate school, with 18 people completing the degree (see survey limitations) Question number 11 asked whether the parent was currently a homeowner or renter. As might be expected, only 18% indicated that they were homeowners. Among the homeowners, over 55% indicated higher than a high school education; less than 45% had a high school education. Only one homeowner responded that they had not achieved a high diploma or equivalency.

Another socioeconomic variable measured was the presence of an adult smoker (18 years or older) in the household; 30% of responders reported a smoker in the home, a full 50% higher than the latest average for Massachusetts. Many of the respondents to this question annotated that they only smoke outside, and not in the presence of the children.

The next two questions sought to measure the aspects of cultural diversity with regard to socioeconomics, as well as indicate what challenges might be anticipated for future educational

programs. Racial origin was divided into four categories, (see survey limitations); African American, Hispanic, White (non-Hispanic), and other. In all 40% identified themselves as Hispanic; 30% White (non-Hispanic); 19% African American, and 11% were of various other racial ethnicities. With regard to primary language spoken in the household, 50% indicated that English was primary, 29% specified Spanish as primary, and 11% listed another language altogether.

The final two questions pertained to the interaction of the local fire department in the family's experience. Only 22 families (8%) indicated that they had ever experienced a fire in their home or apartment. Over 90% of parents surveyed believed that the fire department should take a more active role in public fire/life safety education. Less than 2% responded that they did not wish to see the fire department expand its efforts, or believed that the current level was adequate; 8% were unsure.

Discussion

The overall results of this study are comparatively similar to that of other researchers. The first research question explored was fairly direct, and was answerable by mere observation of the current situation. The question did however open the door to a more substantial dissertation with regard to theories in the area of child development. By virtue of this area of discourse the research was able to develop the foundational background information used in curriculum development. "Curriculum content from various disciplines... is integrated through themes, projects play and other learning experiences, so children develop and understanding of concepts and make connections across disciplines" (Bredekamp & Copple, 1995, p. 130). Observations conducted at three Worcester Child Development Head Start centers confirmed the *Learn Not to Burn* curriculum was easily adaptable to various learning experiences. The

observed practices of instruction utilized at the centers were similar to what Henniger (2002) describes, “Spends most of her time engaged in direct instruction: sharing information with children in small and large-group settings.” However, developmentally appropriate instructional methods were also observed, “Spends much of her time facilitating children’s hands-on learning through playful experience” (p. 78).

The NFPA *Learn Not to Burn* course currently utilized by the Worcester Child Development Head Start program is a well established fire specific curriculum that underwent a vigorous pilot testing program (Gamache et al., 2001; NFPA, 1991). Crawford (2002) describes it as “the most comprehensive approach to the many fire safety programs that exists, and can be used for targeted audiences” (p.78). Within its limited scope of fire specific educational curriculum, the NFPA *Learn Not to Burn* initiative is the decisive model for all others to follow and emulate.

The second issue addressed by the research involves an analysis of the correlation, if any, between socioeconomic demographics and instructional methodology. The original research question implicates a connection with curriculum type, i.e. fire/life safety education; however there was no empirical information that substantiated a connection with a specific subject matter type. Instead, the exploration focused first on defining the socioeconomic demographics of the children in the Worcester Child Development Head Start program and their correlative relationship with fire death and injury risk. Subsequently, that relationship was associated with the concept of identifying the most suitable instruction methods to serve that constituency.

The fire/life safety survey that was conducted substantiates the findings of the other researchers cited. Hall (2004b) lists poverty, education and smoking as the three most significant correlative factors with regard to fire death rates, “consistent with findings in every other study

of socioeconomic and demographic factors related to fire loss” (p.3)” Demographic analysis in these three categories’ at the local level clearly identifies the target group as being significantly at risk. Ninety percent of all Head Start families must be income eligible households, at or below the poverty line as established by the admission requirements of the program (DHHS, 2004). Survey results verify the education levels of Head Start parents. Nearly 60% of those surveyed listed their highest education level as high school, with only 64% of those going on to graduate. Berk (1999) lists years of education as one of the most important factors in determining the socioeconomic status (SES) of the family; “Education also contributes to SES differences in child rearing” (p.76). Parents with higher education levels tend to have higher SES which can have positive effects on a child’s ability to prosper in school. Conversely parents of families with low SES face greater stresses in daily living that can have direct adverse affects in a child’s social and cognitive development (Henniger, 2002).

The other factor cited by Hall (2004b) is smoking rates. The Centers for Disease Control and Prevention (2002) study directly relates the high rate of cigarette smoking with poverty, and furthermore directly with education levels. The home survey results are nearly identical to those found in the American Lung Association and CDC studies for people over the age of 18 in both categories. The Head start parents surveyed were twice as likely to smoke as that of the general population in Massachusetts (ALA, 2004). Clearly all three are interrelated, and establish the adverse conditions necessary for increased risk in the child’s home.

The Head Start program is founded on the principle that disadvantaged children of low-income households require specific remedial educational and social service intervention at the earliest possible age, in order to stem the tide of developmental decline inherent to their socioeconomic condition (Berk, 1999; DHHS, 2004; Warger, 1988). The program’s curricula are

designed specifically for that purpose as are the corresponding instructional methodologies. The teaching methods observed in the delivery of the *Learn Not to Burn* program were consistent with those identified by other researchers. The utilization of varied instructional techniques allows the teacher to provide a more stimulating atmosphere that attempts to reach as many of the children's natural cognitive domains as possible. Warger (1988 p.73) writes "We contend that a program for economically disadvantaged children must include effective academic instruction as well as child development experiences."

Both the direct instruction method associated with the behaviorist school of child development, and developmentally appropriate techniques such as the project method, associated with maturationist school, have utility in Head Start. The *Learn Not to Burn* lessons are amenable to variable instructional techniques as well. Children at the Head Start centers observed were presented the material using a variety of procedures. Direct instruction in the form of circle group activities was a common approach used to deliver important information to small and large groups, an approach supported by Henniger (2002). Many of the physical activities that are required by the curriculum are also amenable to direct instruction. The critical nature of the desired physical behavior for lessons such as *stop, drop and roll* must provide the teacher with immediate feedback as to whether the child has full comprehension.

Use of the project method was also observed within the classroom setting, and constitutes a developmentally appropriate approach to learning. Projects are frequently theme based activities that children explore for the most part independently. The instructional staff provides the suitable components for the children to interact with, and allows their natural curiosities to stimulate inquiry and conversation with teachers and peers (Bredenkamp & Copple, 1997). The Head start classrooms observed had arranged play areas with fire related pictures and props for

the children to freely associate with. Some children role played and interacted with each other in firefighter costumes, while others used paint to draw pictures of firefighters and houses where firefighters were busy saving families and property. Certainly the atmosphere was conducive to both direct instruction, and developmentally appropriate play activities which facilitated a positive environment in which to learn.

The third research question sought to identify alternative curricula to either replace or supplement the existing *Learn Not to Burn* program, and to ascertain if alternative instructional methods were warranted. It appears from the previously cited research that the latter, instructional methodologies are fully functional and appropriate for the curricula and the constituency demographics. The specificity of the current curricula to the exclusive domain of fire safety would appear to be the only drawback to the current system. Increasingly, those entities which were responsible for the development of fire safety curricula like the NFPA and Fireproof Children are expanding their scope and developing more comprehensive all-hazards injury prevention programs for children like *Risk Watch* (Crawford, 2002; FEMA, 2000).

The benefits of an expanded injury prevention program are numerous. All children, but especially children of low SES are subject to all kinds' risk, not just the risk of fire. Appy & Kirtley (1998, p. 5) state "Preventable childhood injuries in North America are worse than a problem -- they are an epidemic!" This opinion is shared by prominent national organizations like Kids Safe and the American Academy of Pediatrics who fully endorse the concept of comprehensive early childhood injury prevention education. In interviews with the Worcester Child Development Head Start administration and center coordinators, there was universal support for a more comprehensive approach to child injury prevention. The Head Start program, in recognition of the problem, has issued its own guide for injury prevention in and outside the

classroom, to be utilized as a professional development handbook for the instructional staff (USDHHS, 2000).

Another distinct advantage of the an overall approach to injury prevention like *Risk Watch* is its utilization of outside resources like the fire service to build coalition and expand the learning environment for children. A motivated coalition “Brings together the resources and momentum of the community and greatly enhances the ability of a few people to reduce preventable childhood injuries” (Appy & Kirtley, 1998, p. 21). The eight diverse injury prevention units are conducive to building these relationships with not only the fire service, but other public and private sector entities like police, emergency medical services, public health organizations, the Red Cross and others (Crawford, 2002). The advantages of strong partnerships with proactive, committed agencies are obvious. The classroom teacher provides the leadership and guidance for the curriculum presentation and is augmented with resources provided by the community partners dedicated to the mission of childhood injury prevention.

The answer to the final question seems fairly obvious; expand the mission and resources of the Worcester Fire Department in the area of public education and develop meaningful partnerships with programs like Head Start. The fire department’s role becomes that of a dedicated resource for public education programs, providing qualified instructional personnel, curriculum and educational materials, and subject matter expertise not typically anticipated from the classroom staff. In its follow-up to the historic *America Burning (1973)*; FEMA’s *America at Risk* (2000, p. 18) emphasizes that, “Fire departments should be encouraged to spend even more time in reaching out to children in schools and other venues” The parent survey results are overwhelmingly supportive of an increased role for the fire department in their child’s educational experience. Goodson & Sneed (1998, p. 136) definitively summarize “Fire

departments can *significantly reduce* the number of fires, and the resulting deaths, injuries and property losses through the delivery of carefully designed public education programs.” The Worcester Fire Department has a statutory and moral obligation to the community to provide the necessary personnel and resources to meet that mandate.

Recommendations

The following recommendations are presented as a result of this descriptive research for the Worcester Fire Department:

- The Worcester Fire Department should create, fund, and fully support a full-time qualified public education component within its organizational structure.
- The department should foster an organizational culture that encourages community service and publicly advocates community risk reduction.
- The department should investigate and pursue funding mechanisms (grants) that can be utilized to provide support materials for public education partners.
- The department should continue to explore new opportunities for community partnerships with other target groups, and provide similar services and resources.
- The department should utilize comprehensive evaluation methods to insure the continued efficacy of its public education efforts.
- Researchers in the area of fire and life safety education can unquestionably benefit from the experiences of successful programs, and the expertise of child development specialist in the academic arena.

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Appendix A

Department of Health and Human Services - Poverty Guidelines -2005

Persons in Family Unit	48 Contiguous States and D.C.	Alaska	Hawaii
1	\$ 9,570	\$11,950	\$11,010
2	12,830	16,030	14,760
3	16,090	20,110	18,510
4	19,350	24,190	22,260
5	22,610	28,270	26,010
6	25,870	32,350	29,760
7	29,130	36,430	33,510
8	32,390	40,510	37,260
For each additional person, add	3,260	4,080	3,750

Appendix B

February 2, 2005

Ms. Patricia Clancy, Interim Director
Worcester Head Start Program
770 Main Street
Worcester, MA 01610

Dear Ms. Clancy,

It has been my pleasure to serve on the Head Start policy council for the past two years as a community representative and as a member of the Father's Day festival committee. As a firefighter and officer of the Worcester Fire Department I have had the opportunity to interact with hundreds of school children during station visits and truly appreciate the responsibility that comes with being a positive role-model for our community and the importance of fire and life safety public education.

I am currently enrolled in the Executive Fire Officer Program (EFO) at the National Fire Academy in Emmitsburg Maryland. This program is a 4-year commitment involving attendance at the academy for two-weeks a year of course work and a subsequent research paper related to the course subject. This year's course entitled *Leading Community Risk Reduction* involves the broad spectrum of hazard prevention; included in that spectrum is the area of fire and life safety public education. I would like to focus my research on the fire/life safety curriculum of the Worcester Head Start program. I have several research questions that I would like to explore and have attached a copy of my research proposal for your review.

I would like to schedule an appointment with you as soon as possible, (at your convenience of course), to better explain what the purpose and scope of my research would entail. I assure you that there will be a minimum of intrusion to the staff and faculty of Head Start and that no confidential information will be required. The end result of this research should produce an enhanced cooperative effort between our two agencies and identify mechanisms for fire/life safety education curricula for the Head Start program.

Worcester Fire Chief Gerard Dio is also enrolled in the EFO program and has approved the commitment from my end and looks forward to expanding the department's role in the arena of public education. I look forward to the chance to meet with you and share the finer details of this project, and convey my enthusiasm for the opportunities I foresee for both of our organizations. As an educator myself, I appreciate the tremendous impact that we can have on the futures of those we reach in the classroom; sometimes, as in the case of fire/life safety, literally saving lives with simple lessons.

Thank you for your anticipated cooperation in this important effort. Please let me know when it is convenient to meet with you via the above numbers or e-mail address, or you can contact me directly via my cell phone at 508-414-1786

Sincerely,

District Chief John F. Sullivan

Appendix C

September 17, 2005

Dear Parent(s),

My name is John Sullivan and I am currently serving in my third year on the Worcester Head Start Policy Council as a Community Representative from the Worcester Fire Department. I am asking for your cooperation and help. I would like to evaluate the fire and life safety curriculum currently in use by Head Start. My goal is to apply for federal grant money to update the materials being used in the classroom. I am distributing a simple questionnaire through your center's family service advocate for you to fill out and return. No personal information will be required, only general information is necessary. All of the data gathered is for statistical analysis only, so that comparisons to national trends and averages can be made to support findings.. The Head Start management team and Policy Council have granted permission for me to move forward with this project.

I would like to thank you all for your anticipated cooperation. The ultimate objective is to improve your child's fire and life safety education experience beginning with the Head Start program!

Sincerely,

District Chief John F. Sullivan - Policy Council Community Representative

Fire/Life Safety Questionnaire

Please return questionnaire by October 3, 2005 to your center's family service advocate!

Thank you for participating in this informational questionnaire! The results of this research are for an independent research project, and all information is anonymous and confidential. I am confident that your child's fire and life safety educational experience can improve with your input!

To be completed by the parent:

Question #1: How many of your children are **currently** enrolled in Head Start?

- a) 1 b) 2 c) more than 2

Question #2: Does your child know how to obtain assistance using 911?

- a) Yes b) No

Question #3: Have you **ever** spoken with your child about what to do in the event of a fire in your home or apartment?

- a) Yes b) No

Question #4: Do you and your child know what E.D.I.T.H. means with regard to fire/life safety?

- a) Yes b) No

Question #5: Do you and your child know what to do if there is smoke in your home?

- a) Stop, drop and roll b) Stay low and go c) Close the windows

Question #6: Do you currently have **working** smoke detectors in your home or apartment?

- a) Yes b) No c) Not sure

Question #7: What type of smoke detectors do you have?

- a) Battery operated b) Hard-wired c) Both d) Not sure

Question #8: Does anyone in your household over age 18 smoke?

- a) Yes b) no

Question #9: What is your highest education level?

- a) High school b) College c) Graduate school

Fire/Life safety survey results									
		Total		Total		Total		Total	Total-all
Question #1	a =1	233	b = 2	27	c =>2	1			261
Question #2	a = yes	35	b = no	226					261
Question #3	a = yes	150	b = no	111					261
Question #4	a = yes	16	b = no	245					261
Question #5	a = Stop, drop...	78	b = Stay low...	159	c = close the...	6	d = NO or d/n/a	18	261
Question #6	a = yes	244	b = no	5	c = not sure	12			261
Question #7	a = battery operated	160	b = hard wired	26	c = both	39	d = not sure	36	261
Question #8	a = yes	79	b = no	182					261
Question #9a	a High School	154							
Question #10a	a = yes	99	b = no	55					
Question #9b	b = college	88							
Question #10b	a = yes	62	b = no	26					
Question #9c	c graduate school***	19							261***
Question #10c	a = yes	18	b = no	1					
Question #11	a = Homeowner	47	b = rent	213	currently homeless	1			261
	b = college				a High School				
	a = yes	26	9 White / 7AA / 7A / 5 H		a = yes	21	7 White / 6 AA / 3A / 3H / 2O		
Question #12	a = African American	49	b = Hispanic	105	c = White (non hisp.)	79	d = Other	28	261
Question #13	a = English	130	b = Spanish	75	c = Other	56			261
Question #14	a = yes	22	b = no	239					261
Question #15	a = yes	237	b = no	5	c = not sure	19			261