



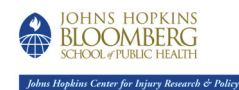
# Evaluating and Creating Fire and Life Safety Materials:

## A GUIDE FOR THE FIRE SERVICE

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FOR THE NATIONAL FIRE PROTECTION ASSOCIATION

DECEMBER 2010



Johns Hopkins Center for Injury Research & Policy



## Acknowledgments

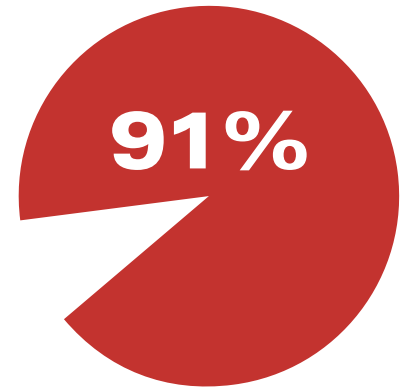
The study that generated this guide could not have been completed without the work of Meath Media, which created the study videos, and Assistance in Marketing in Towson, MD, which helped with participant recruitment and data collection. This project was supported by the dedicated and professional staff of graduate and undergraduate research assistants Kate Barry, Elizabeth Clearfield, Victoria Flores Fernandez, John Giampa, Nick Gilson, Elizabeth Kaplan, Jared Katz, Mary Claire Kozlowski, Aubrey Levine, Saznin Mehta, Meghan Nechrebecki, Stephanie O’Connell, Michele Palopoli, Jessie Parker, Shantini Persaud, Elizabeth Rogers, Kristen Rosenthal, and Jennifer Stagl. Elizabeth Clearfield and Jessie Parker were also instrumental in completing the data analysis and the final report. Funding for this project was provided by the U.S. Department of Homeland Security Federal Emergency Management Agency Fire Prevention and Safety Grant Program.

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## Introduction

**The need for life saving fire prevention education is clear.** Fire-related injuries and deaths take a huge toll on the public's health. In 2009 in the United States, someone was injured in a fire every 30 minutes and someone died every 175 minutes.<sup>1</sup> Because firefighters are so highly respected in their communities for responding to fires, saving lives, and reducing the damage caused by fires, they also can be important spokespeople for fire prevention.

The American fire service began providing fire safety education to communities throughout the United States in 1973.<sup>2</sup> Today's public education efforts touch on many fire and life safety topics, including fire and burn prevention, cardiopulmonary resuscitation, baby sitter safety, pedestrian safety, child passenger safety, and water safety.<sup>2</sup> A recent national survey of Fire and Life Safety Education in U.S. fire departments found that **91%** provided public education activities, and the most common activity, reported by 80%, was presentations to **elementary school children**.<sup>3</sup>



### Keeping Children Safe

The effectiveness of public education for fire and life safety directed at children can be enhanced first by carefully assessing the needs of the community and second by using educational materials and messages that have been designed for maximum impact. (For guidance on assessing health education needs of communities, readers are referred to several other resources.<sup>4, 5</sup>) Once you know **what** needs to be communicated, this guide will help you decide **how** to best communicate the information to help children learn and apply new fire and life safety behaviors.

## The National Fire Protection Association Message Testing Study

In 2010, the National Fire Protection Association (NFPA) contracted with the Johns Hopkins Center for Injury Research and Policy to conduct a study to determine **the best way to communicate safety messages to children 4–9 years old**. That research project sought to determine whether safety messages should be communicated positively (focusing on the positive outcomes of doing appropriate behaviors) or negatively (focusing on the negative outcomes of inappropriate behaviors). Because parents are an important source of safety information for their children, the research also sought to determine the impact of how parents communicate on their children's understanding of the safety messages.

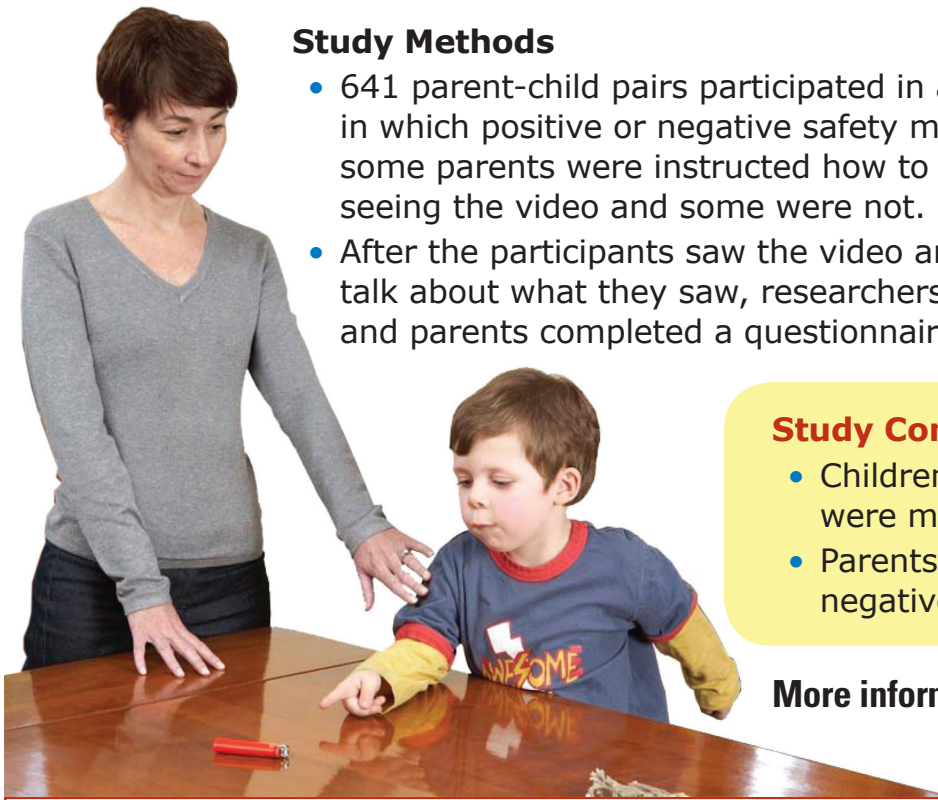
### Study Methods

- 641 parent-child pairs participated in a randomized experiment in which positive or negative safety messages were shown; some parents were instructed how to talk to their child after seeing the video and some were not.
- After the participants saw the video and had a few minutes to talk about what they saw, researchers interviewed the children, and parents completed a questionnaire.

### Study Conclusions

- Children who saw the positive videos understood more and were more confident that they could do the safe behavior.
- Parents rated the positive videos as more effective than the negative videos.

More information about the study can be found at [NFPA.org/messaging](https://www.nfpa.org/messaging).



When parents were given specific instruction on **how to discuss** safety messages with their children, children learned more. Video-based safety messages for young children should focus on depicting the positive outcomes that result from engaging in safety behaviors. Although the study tested videos, the findings have important implications for print materials as well. To avoid potential confusion and to enhance the likelihood that children will retain a message, the study supports the recommendation that **educational approaches should clearly demonstrate the correct safety behavior**. The study also supports the idea that having informed adults talk with children about the safety messages being communicated in videos or print materials can increase the effectiveness of the education. Thus, **parents should be provided with effective tools** that they can use to educate their children about fire safety.

### **Purpose and Overview of This Guide**

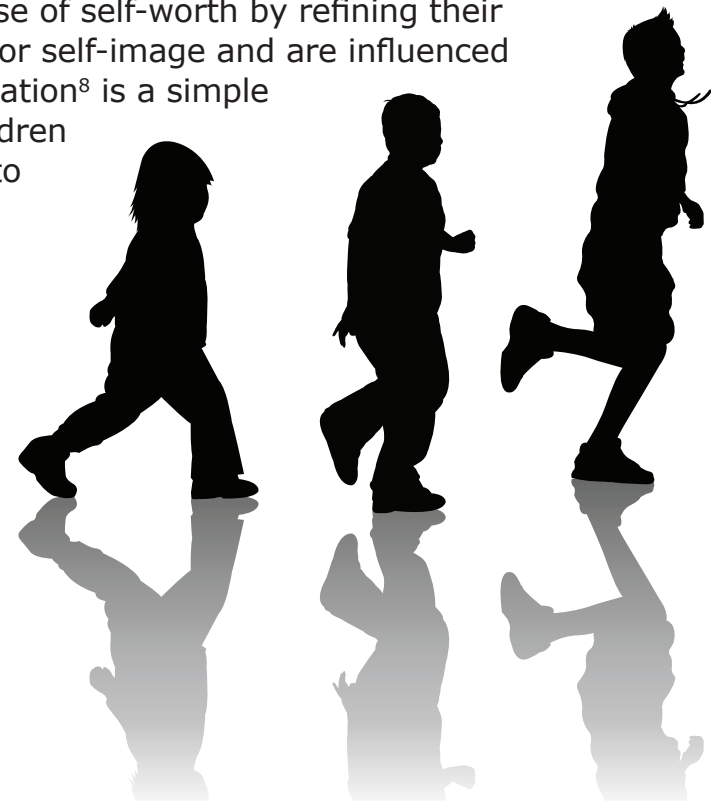
This guide was created to use the results of the Johns Hopkins Fire Safety Study to help fire prevention educators make good decisions about creating and evaluating educational materials. To set the stage for effectively communicating with children, the guide first briefly explains how children develop cognitively and socially. It then provides strategies to create effective fire prevention educational materials and messages for children and families. Ideas are provided for pretesting materials, addressing the needs of low-literacy audiences, and involving parents. Tips on what to look for in educational materials and messages also are offered. Finally, this guide briefly describes steps in putting together a comprehensive plan that will maximize the effectiveness of educational communication programs.



## Understanding the Developing Child

**Understanding the way a child develops is important** in planning the type of information and the kind of education the child can handle depending on his or her level of mental maturity. Physical and psychological development follow predictable patterns. What influences a child's development changes over time, shifting from total dependence on and involvement with the family to increasing independence and peer and other influences in the school and community environment.<sup>6</sup>

Developmental tasks at each age have been described by Erikson.<sup>7</sup> Preschool-age children begin to develop a conscience and to initiate rather than simply imitate activities. School-age children try to develop a sense of self-worth by refining their skills. Adolescents develop their individual identify or self-image and are influenced by role models and peer pressure. Piaget's classification<sup>8</sup> is a simple scheme to understand cognitive development. Children advance from learning mostly through the senses to being able to use rational thought processes, as described in the table on the next page.



# Piaget's Stages of Cognitive Development and Teaching Implications

## AGES AND STAGE

## COGNITIVE DEVELOPMENT AND IMPLICATIONS FOR TEACHING

Birth to age 2:

### SENSORIMOTOR STAGE



During this stage, children learn about themselves and their environment through motor and reflex actions. Thought derives from sensation and movement. Children learn that they are separate from their environment and that aspects of the environment — their parents or favorite toys — continue to exist even though they may be outside the reach of the child's senses. Teaching for a child in this stage should be geared to the sensorimotor system: Modifying behavior by using the senses. A frown, a stern voice, a soothing tone — all serve as appropriate techniques.

From when the child starts to talk until about age 7:

### PREOPERATIONAL STAGE



In this stage, children apply their new knowledge of language and begin to use symbols to represent objects. Early in this stage, they also personify objects. They are now better able to think about things and events that aren't immediately present. Oriented to the present, children at this stage have difficulty conceptualizing time. This thinking is influenced by fantasy — the way they'd like things to be — and they assume that others see situations from the same viewpoint. They take in information and then change it to fit their own ideas. Teaching must take into account a child's vivid fantasies and undeveloped sense of time. Using neutral words, body outlines, and equipment they can touch gives children an active role in learning.

From about 1st grade to early adolescence:

### CONCRETE STAGE



During this stage, accommodation increases. Children develop an ability to think abstractly and to make rational judgments about concrete or observable phenomena, which in the past they needed to manipulate physically to understand. In teaching children in this stage, giving them the opportunity to ask questions and to explain things back to you allows them to mentally manipulate information.

Adolescence:

### FORMAL OPERATIONS STAGE



This stage brings cognition to its final form. Adolescents no longer require concrete objects to make rational judgments. They are capable of hypothetical and deductive reasoning. Teaching for adolescents can be wide-ranging, because they are able to consider many possibilities from several perspectives.

*Adapted from: [honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/piaget.htm](http://honolulu.hawaii.edu/intranet/committees/FacDevCom/guidebk/teachtip/piaget.htm)*

## Strategies for Effectively Communicating with Children

**Educating children can be an important component of comprehensive fire prevention efforts.** In fact, a mainstay of Fire and Life Safety Education in the U.S. fire service is school-based education for children.<sup>3</sup> Unfortunately, few of these efforts are rigorously evaluated. However, using “best practices” in planning and implementing communication and behavior change programs can help ensure that such efforts are effective. According to health education and communication experts,<sup>9</sup> effective communication can:

- Increase the intended audience’s knowledge and awareness of a health issue, problem, or solution
- Influence perceptions, beliefs, and attitudes and perhaps change social norms
- Prompt action
- Demonstrate or illustrate healthy skills
- Reinforce knowledge, attitudes, or behavior
- Show the benefits of behavior change
- Advocate a position on a health issue or policy
- Increase demand or support for services
- Refute myths and misconceptions
- Strengthen organizational relationships

There are many educational methods to choose from that can be used with a variety of audiences. Lectures and discussion are mainstays of education. Short films and visual aids like posters, pictures, and charts can enhance lectures and focus discussions. Children may especially enjoy activities such as:

- Songs
- Books and story telling
- Games that involve competitions, prizes, role play
- Field trips
- Experiments and the use of manipulative materials





**Educational methods** and materials should involve the audience in active learning and problem solving. Providing opportunities for both small group and individual activities can help keep the audience engaged. With children, the use of open-ended questions, including asking them for their opinions and giving them choices, may work especially well. Emphasizing positive safety behaviors and ensuring that children understand and can perform those behaviors are critically important.

**Even print materials** can engage an audience. For example, using a question-and-answer format and providing a checklist or action items are ways to more fully engage the audience in the learning process. Materials should encourage discussion among family and friends as well, which helps to both reinforce the message and spread the word.

These suggestions lend themselves to classroom teaching as well as to providing learning opportunities in other settings. In addition to field trip opportunities such as visits to fire stations, other innovative educational programs with demonstrated promise can be considered. For instance, children's safety villages provide curriculum-based education in community settings that are constructed as child-sized neighborhoods where children can learn about and practice safety skills (e.g., pedestrian safety, home safety). At least one study has favorably evaluated the impact of this approach.<sup>10</sup> Another community-based approach is the delivery of educational programs through mobile units that many fire departments operate. In Baltimore, the **CARES (Children ARE Safe) Mobile Safety Center** is a partnership between the Baltimore City Fire Department and the Johns Hopkins Bloomberg School of Public Health's Center for Injury Research and Policy. In addition to directly educating children, the CARES center provides reduced-cost safety products and an educational curriculum directed at adult caregivers ([www.jhsph.edu/injurycenter/practice/safety\\_centers/hopkinscares.html](http://www.jhsph.edu/injurycenter/practice/safety_centers/hopkinscares.html)). The academic partnership facilitated evaluation of the mobile unit's impact, which was generally positive.<sup>11, 12</sup>

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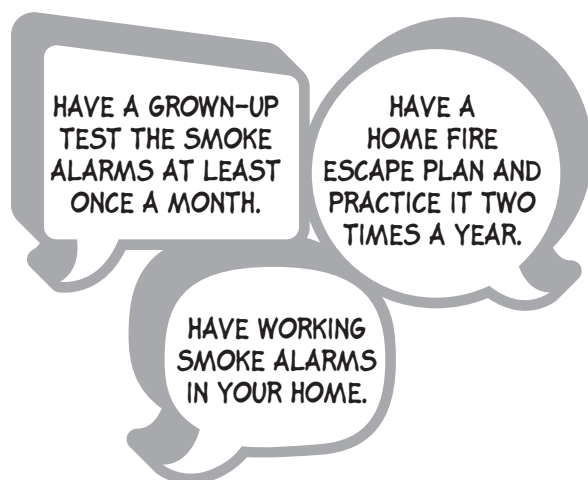


## Involving Parents

**Teaching children safe behaviors** is necessary, but it can be insufficient for some fire and life safety behaviors. Parents and other adult caregivers play a vital role in protecting children. For instance, young children require adult involvement to have working smoke alarms in their homes. In the evaluation of the Children's Safety Village in Hagerstown, MD, parents reported making safety improvements as a result of the educational messages and materials their children received.<sup>10</sup> Results from the Johns Hopkins–NFPA message-testing study also found that having adults talk with the children about the safety messages they received increased children's understanding of the messages and their confidence in being able to do the right thing themselves.

There are many options for involving parents, depending on where and how the program is reaching children. For instance, a school-based program may send home materials for the children to use with their parents (e.g., a home safety checklist that the parent and child can complete together), or a community fair may have one educator working with the children while another meets with the parents. Results

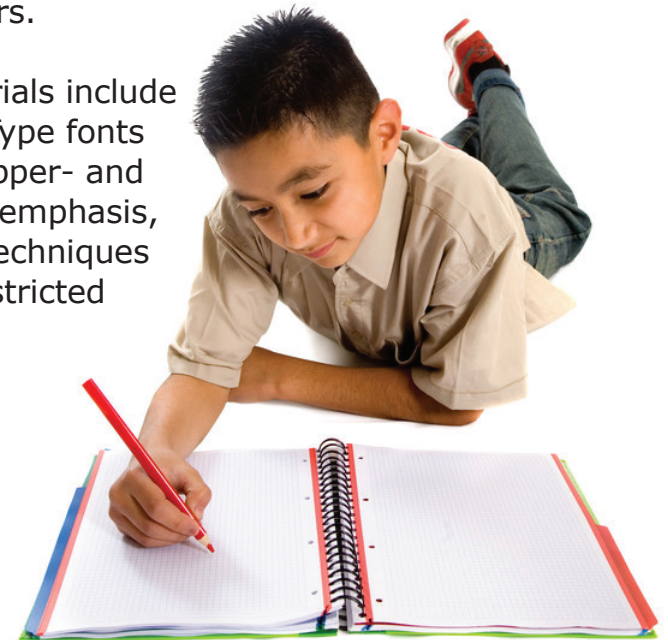
from the Johns Hopkins–NFPA message-testing study also strongly suggested that **parents need specific safety information to share with their children**. For example, instead of telling parents, "Talk to your child about what to do if there's a fire," it is better to say something like "Make sure your child knows these three important points...."



## Literacy Considerations

Developing messages and materials for adults requires the same careful **planning** as for children. In the case of adults, an often overlooked issue is literacy level. Although **14%** of the adult U.S. population (30 million people) reads at a level that precludes being able to perform even simple and everyday reading tasks and an additional **29%** (63 million) can read only at a basic level, at least two studies have demonstrated that child safety materials for parents are often written at much higher reading levels.<sup>13, 14, 15</sup> Testing the reading level of print materials is a simple and quick process, with programs available in standard word processing packages (such as Microsoft Word). Aim for a reading level of no higher than **fourth grade** for an audience that has reached grade 4 and above. Aim for a reading level of less than fourth grade for an audience of early and young readers.

Techniques for reducing the literacy demands of print materials include using **short sentences** and words with **fewer syllables**. Type fonts also affect how hard or how easy material is to read, and upper- and lowercase text is the best. All capital letters, often used for emphasis, are difficult for people with limited reading abilities. Other techniques for preparing print materials suitable for individuals with restricted literacy include using adequate white space and organizing the text into small, **meaningful chunks**.<sup>16</sup>





## Pretesting Options

In addition to testing print materials for literacy level, a critically important step is **pretesting** (for adults as well as children). Pretesting does not need to slow down the process of getting information out to people — it can be as simple as getting **feedback** on a draft from neighbors or colleagues who are similar to your intended audience. More systematic approaches, however, are preferred, such as convening focus groups of people who represent your intended audiences or simply talking to people individually. Guidelines on what questions to ask<sup>9</sup> include such things as asking people to rate the attractiveness of the material, to tell you the main messages contained in the material, and to provide suggestions for **improving the material**. Pretesting with members of your intended audience helps ensure that your materials will be well received and culturally appropriate.

## What to Look for in Materials and Messages

A good place to start is existing materials created by nationally recognized fire safety education groups. To assess the usefulness of your own or other materials, consider the following points, which come from the Johns Hopkins–NFPA study and instructional experts in the education system:<sup>17</sup>

- Material should be **consistent** with recommended messaging that has been developed by the NFPA Educational Messaging Advisory Committee.
- Illustrations should demonstrate **contemporary** children, adults, people with disabilities, and racial diversity.
- Illustrations and messages should demonstrate **positive** fire safety messaging, showing correct behavior and telling the audience what to do.
- The reading level should be **appropriate** for the intended audience. Select a portion of the text and type it into a Word document to determine the reading level. Aim for a reading level of no higher than grade 4 for an audience that has reached grade 4 and above. Aim for a reading level of less than grade 4 for an audience of early and young readers.
- Materials should be **developmentally appropriate** for the audience. Take into consideration the cognitive and developmental capabilities of children at different ages, as described previously.
- Materials should **involve** the audience in active learning, inquiry, and problem solving. Even print materials can engage the audience. For example, use a question-and-answer format or provide a checklist or action items for the reader to do. Materials should encourage discussion among family and friends.
- Materials intended for children should **offer ideas for involving parents**. Information for adults on how to talk with children about the messages should be included, such as information on the key safety messages that children need to know.



Ideally, educational materials should have been **field tested** to show positive effects on the intended audience. It is helpful if materials also include assessment tools that you can use with your audience (such as observation, pretesting and posttesting, video reflection, or performance assessment materials). You will want to use some type of **evaluation tools** to see how well the materials worked with your specific audience, even if the materials have been evaluated elsewhere.

### Creating a Comprehensive Communication Plan

Educating children and their families to be safe requires more than a well-crafted message or print material. Putting together a comprehensive educational program or communication campaign requires careful **planning** and usually **collaboration** with other organizations that can help you achieve your goals. An example that draws on a planning guide produced by the National Institutes of Health<sup>9</sup> and other resources<sup>4, 5</sup> follows (the references will be helpful for those seeking more detailed information on any of the steps involved in planning, implementing, and evaluating comprehensive fire and life safety education programs).

For maximum effectiveness, planners should work with a team of individuals that includes members and/or representatives of the intended audiences (e.g., parents, teachers). This type of planning team will provide invaluable insights into the needs, wants, and capabilities of the individuals you intend to serve.

**“...planners should work with a team of individuals that includes members and/or representatives of the intended audiences.”**

## To Develop Effective Health Education and Communication Campaigns:<sup>9</sup>

### Define the communication campaign goal and objectives

- IDENTIFY the larger goal.
- DETERMINE which part of the larger goal could be met by a communication campaign.
- DESCRIBE the specific objectives of the campaign, which should be SMART:
  - Specific
  - Measurable
  - Action oriented
  - Realistic
  - Time bound

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### Define the intended audience

- IDENTIFY the group to whom you want to communicate your message.
- CONSIDER identifying subgroups to whom you could tailor your message.
- LEARN as much as possible about the intended audience. In addition to demographic characteristics, add information about beliefs, current actions, barriers to change, and factors in the social and physical environment that are relevant.

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### Create messages and materials

- BRAINSTORM messages that fit with the communication campaign goal and the intended audience.
- IDENTIFY channels and sources that are considered credible and influential by the intended audience.
- IDENTIFY educational methods and materials needed to effectively communicate messages and appropriate for the setting and channels.

### Examples:

The goal of the campaign is to reduce fire deaths and injuries in the county.

Communications will be used to inform county residents about how to get free smoke alarms and why they need working smoke alarms on every level of the home, outside each sleeping area, and inside each bedroom.

The primary objective is to increase by 50% the rate of working smoke alarms and the appropriate number of home smoke alarms by the end of the 2-year campaign.

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The intended audience is all residents in the county.

High-priority subgroups are older adults and families with young children.

Methods to learn about the audience include focus groups, surveys, experiences of existing programs, published literature.

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Installing smoke alarms inside all bedrooms is new to most families, so messages could emphasize “new and improved.”

Many people don’t think their home is likely to have a fire, even if they know or have heard of others who have. Messages can point out this discrepancy in perceptions.

Older adults can be reached through senior centers and health clinics.

Families with children can be reached through schools and day care settings.

Many options to choose from include presentations, short films, posters, pictures, graphs, charts, songs, books, storytelling, games, role plays, field trips, experiments, demonstrations, brochures, fact sheets, home checklists.

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### Characteristics of Effective Health Education and Communication Campaigns:<sup>9</sup> (CONT.)

#### Pretest and revise messages and materials

- SELECT pretesting methods that fit the campaign's budget and timeline.
- PRETEST messages and materials with people who share the attributes of the intended audience.
- TAKE the time to revise messages and materials based on pretest findings.

#### Examples: (CONT.)

Messages and materials could be pretested with older adults and children through places of worship, at neighborhood fairs, or in malls.

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#### Implement and evaluate the campaign

FOLLOW a well-developed plan that includes:

- COMMUNICATION strategy
- PARTNERSHIP plans
- PROMOTION and distribution plans
- EVALUATION of the process, its impact, and the outcome

Your communication strategy describes the audience, messages, methods, channels of communication.

Partners for a smoke alarm campaign could include schools, teachers, places of worship, neighborhood organizations.

Promotion can occur through all the partner organizations and the media; distribution can be in participating schools, day care centers, senior centers, and health clinics.

**Process evaluation** documents the delivery of services and the distribution of materials. It answers this question: How was the campaign implemented?

**Impact evaluation** documents the extent to which knowledge, behavior, policies, and other relevant circumstances changed. It answers these questions: Did we achieve our objectives? Do more people have working smoke alarms?

**Outcome evaluation** determines whether health and quality of life have changed. It answers these questions: Has health status changed? Have there been fewer fire-related deaths and injuries?





## Conclusion

Providing effective fire and life safety education to children and their families is both challenging and rewarding. The purpose of this guide is to offer suggestions for maximizing the effectiveness of such education. Key elements for success include careful **planning** and **pretesting**; **involving** the intended audiences in planning, **engaging** both children and their parents; **focusing** on positive messages about the correct safety behaviors; and **implementing** comprehensive approaches. Evaluation should be built into every program so that lessons learned can shape future efforts and increase the efficient and effective use of prevention resources.

## Endnotes

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