

THE TWELVE Cs OF DISASTER PREPAREDNESS EDUCATION

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ABSTRACT

Educating the public about hazards such as tornadoes, earthquakes, hurricanes, fires, and floods, among other natural and technological events, not to mention a deliberate attack on human life such as a bombing or intentional release of a biological agent, is always a challenge. People generally do not want to believe that anything bad can happen to them. They are usually in a state of what risk communicators call *denial*. They want to decline acknowledgment of negative consequences that may result from impact of natural hazards because they either believe firmly that the hazard can not happen *to them*, where they live, or they rationalize about the impacts of the hazard to believe (or want to believe) that such events can only happen elsewhere, will not be “that bad,” or attribute to the fates and say to themselves, “If it is that bad, there’s nothing I can do about it anyway.” Worse, some are under the misconception that the Government, the Red Cross, or insurance will provide funds to restore their household to its pre-disaster state.

In order to be more successful in engaging the public in meaningful activities toward being prepared for disasters and disruptive events, those who desire to do this work should keep twelve points in mind which research has shown to improve the effectiveness of disaster preparedness education. These “twelve Cs” are:

Community Focus
Cost-effectiveness
Conciseness
Clear Messages
Common Language
Citizens

Consistent Messages
Coalitions
Compel Action
Constant Repetition and Reinforcement
Children
Conversation

(1) Community-Focus

In order to overcome the typical denial that disasters “don’t happen here,” it is important to keep a focus on what events have happened in *that* particular community in historical terms. Disaster research has shown that people are more likely to prepare for things they believe can happen where they are. Providing information about events that are perceived to be unlikely, even though they may be possible, is an educational exercise fraught with the real potential for inaction. If people do not believe that the event can happen *to them where they are*, then they see no possible risk and go about their daily lives with the relative comfort that they don’t have to worry about it.

Even in times of uncertainty about terrorism, people generally do not want to believe they are at risk, feel the risk is remote, or feel there is nothing they can do about it anyway. These perceptions and feelings of helplessness, which are all stages of denial, do nothing but further the perception that there is no need to engage in preparedness actions and mitigation activities.

Denial is also why earthquake education in the Midwestern United States is so difficult. While the strongest earthquakes to have ever occurred in the continental United States happened in the New Madrid Fault Zone in 1811 and 1812, these events are so distant, and historical records are so sparse (due to the fact that relatively few people lived in the area at the time), that the cries of risk and danger by disaster professionals often go in one ear and out the other. Years later, there remains a “post-Browning syndrome.” Dr. Iben Browning, a microbiologist, using prognostications from Nostradamus, projected that a major earthquake of significant consequence would happen in the Midwest on December 3, 1990. The earthquake did not happen. Even

today some say that the cautions and concerns promulgated by emergency management professionals were “all hype” since the event did not happen.

Public opinion has indicated that people think that disaster professionals are far more worried about liability. These days, concerns about liability are considered similar to a “Chicken Little” syndrome, and are often ignored or discounted as “lawyers finding things to worry about.” Look at the number of warning signs and caution messages that come with almost any consumer product, from home playground equipment, to power tools, and even to self-assembled bookcases. There is a perception that if everyone heeded all warnings, no one would use or install any consumer products, else all would be severely injured. This is simply not true.

What has proven to be effective in getting people to prepare for perceived low-risk events is to get them to get prepared for an event that is more frequent and therefore considered to be a higher risk. For example, consider doing tornado preparedness in the states that are in the New Madrid Fault Zone. If people are prepared for tornadoes (such as having a family disaster plan and a disaster supplies kit), then they will be more likely to be prepared for a less frequent, but potentially more damaging event, such as an earthquake. Or, fire safety and general disaster preparedness education in states where natural hazards are infrequent. Home fires can happen anywhere, and while more frequent in the winter months when people are confined indoors, more people would consider engaging in fire safety activities at any time of the year. And, if one is prepared for a fire at home by having an escape plan as part of their family disaster plan, they will be more likely to be able to deal with other hazards that are considered highly unlikely to occur.

(2) Cost-Effectiveness

In order to encourage more action toward personal and family disaster preparedness, the behaviors suggested must be cost-effective. That is, if people generally want to deny that anything bad can happen to them, then they will be less likely to want to invest personal resources (time and money) into getting prepared for disasters and to mitigate their effects.

Further, society today is socioeconomically stratified. There is a widening gap between the “haves” and “have-nots.” Those with financial resources believe that they can pay others to take care of them, from purchasing insurance, to having professionals build and install protective equipment. But they are unwilling to do this work themselves, because being in denial, they do not see the potential for a problem. “Somebody else” will pay for any disaster consequences – their insurance, government, or others. “Somebody else” will take care of them. The perception is “after all, we have paid our taxes and insurance premiums, and even gave a donation to the Red Cross, so ‘they’ will take care of me.”¹

Those without discretionary funds are often just getting by each day, and consider themselves successful when they can feed their families and provide a roof over the heads of those they love. So recommendations to invest money in purchasing a large cache of disaster supplies, or taking physical mitigation damage-reduction steps (such as purchasing and pre-cutting plywood shutters for hurricane wind protection, or

1 Sometimes those who attempt to offer preparedness education to the public are their own worst enemy, because they give a lot of safety advice, but then undo their recommendations by stating that the public can always count on the Red Cross and Government for disaster relief. Some people have questioned, “Well, if you’re going to help me, then why should I bother getting prepared?”

bolting bookcases to wall studs for earthquake safety) is considered financially infeasible.

In order to get people to invest themselves in their own safety, preparedness education professionals must start with simple, cost-free, recommendations, and then build on those recommendations. For example, testing a smoke alarm does not cost anything. If the test reveals that a battery must be replaced in the alarm, that is an investment of less than \$2. They do not need to call a professional to remove the old battery and replace it with a new one.

It makes more sense to start at the beginning, first getting people to be aware of the environment around them, and teach them how to recognize the environmental warnings of severe weather. This is cost-free. But if more people were able to recognize when danger was on the way, then our nation, as a whole, would have fewer disaster-caused injuries, deaths, and damage to homes.

Continuing this process, they can be provided information that is not readily apparent. Like learning whether their community is on an earthquake fault zone, or subject to landslide hazards.

Next, people can learn how to protect themselves when a natural hazard threatens. Personal safety is easily taught, and it does not cost anything to learn “Drop, Cover, and Hold On” for earthquake safety, or how to identify a safe location to go to in case of a tornado. Practicing a home fire drill, which National Fire Protection Association research shows that only about 16% of Americans have ever done, is free. Practicing home and workplace safety drills can be fun, and involve the whole family. These home drills take little time, but have been shown that when the real event happens, those who practice are 80% more likely to do what they practiced when the

event happens. Translating practice into actual safety actions is important, and people will often do what they practiced, but not necessarily do it if they have not practiced. That is because some of the recommendations (particularly the “Drop, Cover, and Hold On” safety action in case of an earthquake) is counterintuitive. It does not make sense to stay in a place where things are shaking and flying around. However, research has shown that after the Northridge Earthquake of 1994, 74% of people who self-reported that they moved a significant distance from where they were when the main shock happened suffered an injury of some sort. Staying in place proved to be the best thing to do.

Once people learn more about how to recognize potential danger, and practice what to do, which all do not cost anything, they are more likely to consider taking actions that require a larger investment of time and financial resources. But that’s why it is strongly recommended to begin with awareness-raising and drill/practice instruction before launching into offering physical mitigation recommendations, because mitigation activities often require an investment of time and money—sometimes substantial funds.

(3) Conciseness

One of the common failures, particularly of novice preparedness educators, is to tell everybody everything all at once. The recipient of this information often feels overwhelmed. Eyes glaze over, and the brain begins to wander.

The best approach, proven by the most effective preparedness educators in the United States, has shown that it is important to get to know the intended audience, their socioeconomic factors, and identify just a few messages that are appropriate for them. Research in 1996 by BBDO Advertising, on behalf of the Red Cross, confirmed that educators should select seven or fewer messages when preparing a preparedness

education presentation. The messages selected should be interrelated, so they support one another. Seven discrete, separate, unrelated messages tend to bog down the conciseness of the presentation. If one wishes to share separate, discrete messages, it is better to select three such messages, and then later share additional messages, when the audience has absorbed and perhaps acted on the first set of messages.

(4) Clear Messages

It is amazing how convoluted some messages can become. Sometimes educators wish to include all pertinent information, but doing so often complicates the message. Pedagogical research from Piaget and others in the education field has indicated that people should be provided the “most best” message. That is, the single message that works for most people most of the time. For example, “Drop, Cover, and Hold On” in an earthquake is the best option for earthquake safety in the United States. While it is still acceptable to recommend bracing oneself in a doorway that is built into a home or building’s structure, the explanation of how to do that correctly is difficult to provide. That method of earthquake protection only works for physically-able adults. Children are too small to use a doorway for safety. It requires that the adult position the body in the doorway in a precise way (rear end against the hinges, hands reaching across to the door frame, tucking the head into the crook of the arm.) Explaining how to do that is hard, particularly if practice is not included. Further, using data from the 1994 Northridge Earthquake referenced earlier in this paper, if the doorway is more than a few feet away, one is likely to become injured if one attempts to get to the doorway during violent earthquake shaking. However, there are no reports of injuries among

those who dropped, covered, and held on where they were, or just simply pulled the bedcovers over themselves and remained in bed.²

(5) Common Language

It is important to use language that people generally understand and accept. The public generally accepts the wording “preparedness” to be all-inclusive of steps to take to be safer before, during, and after a disaster. While some of those steps may involve physical mitigation activities, those who make a distinction among the public about “mitigation” compared with “preparedness” often miss the point that the public does not accept or use the term “mitigation” the way that disaster professionals do. They sometimes confuse the term “mitigation” with “litigation” or other similar words that rhyme or do not mean what is intended. The author’s contention is, “are we teaching vocabulary or safety?” If the answer is the latter, as it is hoped that it would be, then when dealing with the public, it is best to keep using the language that people use in their daily lives.

Make recommendations using common terms, and avoid at all costs the use of acronyms and wording understood to professionals but not the public. People could not care less if the Moment Magnitude rating of an earthquake is or is not the same as the reported “Richter rating” or “Mercalli Scale” of the earthquake. What they want to know is, “could the earthquake be strong enough to cause shaking that would damage my home or cause me to be knocked down or hurt?”

² Note: There was considerable attention given in the media to a post-Northridge recommendation to roll out of bed and lie next to it. Injury data available six months after the earthquake revealed that people who indeed said that they rolled out of bed had injured their bodies (mostly arms and torso) by rolling onto earthquake debris, usually glass.

In another example, consider the thinking on providing lists of “do’s and don’ts.” In the 1980s, documents on flood safety from several national agencies had lists of “do’s and don’ts.” However, there were far more “don’ts” than “do’s”, and when someone was told not to do something without the corresponding information of what to do instead, it left the reader with questions about correct and recommended actions. They just simply didn’t know what to do. So if that’s the intent, just do it. Tell people what to do, not what not to do.

There is also one more caution to consider about using common language. Sometimes people do not understand the vernacular expression and take it literally. Here are two examples:

- For winter storm safety, there is a recommendation that if one gets stuck in a car in a storm, to open the window slightly on the side of the car where the wind is not blowing for air circulation. One local emergency management agency in the Midwest made this recommendation by writing the expression, “crack the window,” in a brochure. And, someone took that recommendation literally. That is, he used his arm and elbow to strike a blow to a car window to “crack” it, and broke his arm bone. The emergency management agency was threatened with a lawsuit for the “cracker’s” medical bills.
- Earthquake safety recommendations have said “duck, cover, and hold” in California. With so many people living in California whose primary language is not English, the verb “to duck” has been confused with an animal that quacks. An informal study done by a graduate student at the University of California, Los Angeles, showed that as many as 48% of adults living in the Greater Los Angeles area did not understand the use of the word “duck” as a verb replacement for the word “drop.” For that reason, members of the National Disaster Education Coalition chose to recommend using the verb “drop” in publications and web sites—saying “drop, cover, and hold on” instead of “duck, cover, and hold.”

(6) Citizens

It is not commonly understood that only a sovereign nation, like the United States, can grant citizenship to individuals. Cities, counties, and states can not grant citizenship, thus, it is a misnomer to refer to the public in general as “citizens of (x locality).” “Citizens” of (x county or state) is legally meaningless.

The term that one finds often now in preparedness information is, “Citizen Preparedness.” This is meant, of course, to refer to the public at large. The problem is, however, that with the sociological changes that have occurred in the U.S. since the terrorist attacks of September 11, 2001, there is some confusion by people who are not United States citizens as to whether preparedness education information pertains to them.

What was a commonly-used term – citizens – has become caught up in the furor of the “war on terror” and continuous references by the U.S. federal government in its writings and public quotations. This matter is made worse from the fact that the Department of Homeland Security encompasses not only FEMA, Citizens Corps, and related activities involved in public disaster preparedness education, but also Immigration and Border Protection. The situation is even more complex by DHS’ insistence on identity, and having its logo included on all disaster preparedness materials distributed by any DHS agency, including FEMA. It is difficult for non-U.S. citizens to distinguish which component of DHS is providing the information, and sometimes they have expressed a feeling of disenfranchisement.

The main question is this: Does one’s citizenship have anything to do with disaster preparedness information and instructions? Of course not. However, those who continue to use this language and may have a military or law enforcement

background, may inadvertently continue to use the word “civilians” or “citizens” when their intent is to be inclusive and refer to everyone. That being the case, there are some alternatives to consider:

- “residents of (x location)” or another term that incorporates the location, such as “Marylander”. When you can personalize a risk by including a location that people identify with, they are more likely to get past denial and pay attention.
- “visitors” when distinguishing information for those who do not reside in the area. This is especially important if response actions for an oncoming event such as a hurricane are different for non-residents than they would be for residents.
- “public” or “the public” is another option, though professionals in risk communication will identify that there are many “publics” with whom preparedness information is communicated.

(7) Consistent Messages

Past errors have pointed out that providing consistently worded disaster safety recommendations is critical to getting people to do what they should do. Since most people are “in denial,” they tend to “shop around” for information, or engage in the process of “verification.” The most classic example is listening to a particular radio or television station, and hearing that it will rain. Some people change the station to check to see what others are saying, and compare results. If the messages are consistent, then they generally believe the weather prediction. The author commends the National Weather Service for taking strong measures to ensure that its messages are consistent within its respective service areas. The National Weather Service predictions are often repeated on local radio and television, so the messages therefore are consistent, whether the public is listening to local media, The Weather Channel, or NOAA Weather Radio.

Another classic example of past mistakes is providing inconsistent disaster safety recommendations. In the early-to-mid 1990s, it was easy to find brochures and recommendations about the same hazard that were widely different. The author, in a

totally nonscientific study, picked up more than 100 brochures about hurricane safety from various public offices from Maryland to Florida in 1990. He compared the messages in those brochures, and was shocked to find recommendations such as “put tape on the windows,” “open windows on the leeward side of the house to minimize damage from air pressure,” or “cover windows on the front of the house.” (As hurricanes only come in the front door?)

People will do the easiest and least costly thing, if they are given an option. So written materials that differ in safety recommendations could result in people choosing an option that is not appropriate. For example, placing tape on windows for hurricane wind damage has been shown to be completely ineffective, as well as resulting in damage to windows caused by the tape’s adhesive permanently adhering to the glass when baked on by sunshine. When a window is damaged and weakened by wind-blown debris, winds can begin to enter a home. Even a small hole can introduce tremendous wind-caused pressure inside the home. It is that pressure that causes walls to collapse and the roof to fly off. So the *only* recommendation is to completely cover all windows with shutters or strong plywood or storm shutters to help maintain the home’s outer protective shell and keep winds out.

(8) Coalitions

Research has shown that the public trusts information much more from agencies who present their information in similar methods, using identical materials. The trust and recognition of “joint-logoed” materials resulted in tremendously increased demand for such products. For example, in the late 1980s, the Federal Emergency Management Agency, the National Weather Service, the U.S. Geological Survey, and the American Red Cross each had separate documents on hazard topics such as

floods, tornadoes, hurricanes, earthquakes, and general preparedness. In the early 1990s, these agencies decided to combine some of their materials, and disseminate them as one document with multiple agency logos on them.

The work to review messages and produce joint materials evolved into formalizing the National Disaster Education Coalition³.

This coalition, composed of federal government and national nonprofit agencies, met monthly from 1992 to 2004, and produced far-reaching results. Most of its efforts resulted in much more consistent information shared among all agencies with their respective clientele. Further, coalition agency partners agreed to produce some printed materials together, so no matter where one got the information, he or she would get the same document.

When that happened, demand for these materials skyrocketed. The demand was geometric in comparison with materials disseminated by single agencies alone. For the most part, this was a good thing; however, it put strains on each agency's ability to meet the increased demand.

Results from several focus groups assembled in 1996 asked questions about materials produced through the efforts of the National Disaster Education Coalition.

These are key results of these focus groups:

- People said that they trusted information from multi-agency materials more, because it was obvious to them that all agencies agreed on content and therefore it must be "better."
- People were less likely to "shop around" for information from different sources that provided an "easy way out." For example, before 1990, some agencies still recommended applying tape to windows for hurricane wind protection. Since national agencies combined hurricane education materials, and no national

³ The National Disaster Education Coalition essentially fell apart in early 2005, though it was renamed "Coalition for Disaster Education" (CODE) to go by an acronym, defeating one of its own tenets, to avoid the use of acronyms which are meaningless to anyone else.

agency recommends using tape any more, the use of tape by the public for hurricane window protection has declined throughout the 1990s.

- People were getting information from different sources. It was clear that not all agencies could reach everyone who needed the information. Combined efforts reached far more people than individual efforts did.

Further, and what is most gratifying to all involved in the process of preparedness education, is that post-storm or post-earthquake research and surveys revealed that many people were following recommendations made in jointly-developed materials because 1) the materials were readily available to them and had become, for all intents and purposes, their “only option”; and 2) the materials were practical, understandable, and consistent.

The National Disaster Education Coalition assembled all of the messages about natural and technological hazards, as well as general disaster preparedness, into a single document titled *Talking About Disasters: Guide for Standard Messages*. This Guide, which is in the public domain, was first published in May, 1999, and was updated and re-published in July, 2004. One chapter was updated in March, 2007. It reflects the consensus of all agencies that participate in the coalition. The Guide is for communicators and educators, who may develop web sites, brochures, or other educational materials for the public.

The publication of the Guide’s messages demonstrates 1) agencies and media were looking for accurate, consistent, and appropriate disaster safety messages; 2) the public benefits from more consistent disaster safety information, as there are fewer options.

If anything has been learned over the years from reading hazards research and talking to academic professionals, as well as the public, it is that consistent information

is the key to success. When all agencies are saying the same thing, people have more respect for the content of the information provided and for individual organizations.

The “down side” to increased credibility and consistency of information is that individual agency recognition is diminished. There were a number of times when emergency managers asked for “those Red Cross brochures” and Red Cross representatives ask for “those FEMA brochures,” when, in fact, they were one and the same. Certainly individual agency recognition and its reputation with the public is important to management in each agency. Some times, budgets and staffing for public education efforts within each agency are related to the awareness and recognition of the specific agency.

However, recognition of the specific agency must be less important than the good derived from increased consistency of information and the building of public trust and confidence. After all, the common goal is wanting the public to know what to do and how to respond. People have said that they find jointly-developed materials to be far more credible and these joint materials have been shown to be much more effective in motivating action. So a “compromise” on individual agency recognition must be part of the package.

(9) Compel Action

All professionals in the disaster safety business want people to take action to prepare for and reduce the effects of disasters. What has been shown to work is to demonstrate the actions to take. People need to see what to do.

Some professionals in the emergency management community have believed that showing people what *not* to do will help educate people on the correct actions to

take. However, if images or illustrations are included with those “what not to do” recommendations, people will likely remember what they see, and not what they hear.

According to pedagogical research, most Americans learn visually, not verbally. It is critical that the visual and verbal messages agree; else, people will do what they remember. So, for example, showing vehicles driving through flood waters and saying “don’t do this,” causes far too many people to remember the image of a vehicle moving through water. When they encounter such a situation themselves, they may take a chance on driving through moving water, because that’s what they remembered seeing. If one wants someone encountering a flooded road to turn around and go another way, that is the image to show—someone turning around and driving away, not attempting to drive through it.

Further, some people offering safety presentations think that appealing to fear—showing massive disaster damage, for example, will cause people to want to avoid such problems. A study done in 1992 by the author, and reaffirmed in 2001, has shown that the presentation of disaster damage images is influential in heightening individuals’ denials and causing them to want to avoid taking necessary steps to undertake disaster preparedness measures. Since people are in denial, they do not want to think of something bad happening *to them*. Hence, making a presentation that is filled with images of damage only serves to heighten denial, not encourage action.

Since the greater emergency management community believes it is important to encourage the public to prepare ahead of time for disasters, then they must provide the most persuasive argument to cause people to take action. The data in that study affirm the following:

- The public must not only be told but also be shown what to do;

- Disaster damage images enhance recall of a presentation—however, presentations that include visuals showing disaster damage have a direct negative effect on the purpose of preparedness education presentations, which is to encourage the public to prepare in advance for a disaster;
- More members of the public will take appropriate preparedness steps and feel more able to deal with disaster when they are shown correct behaviors as opposed to images of damage that may occur as a result of a disaster happening to them;
- Disaster damage images heighten avoidance and denial.

The author is not saying that one should not use any damage images at all.

Such images can be used in the beginning of a presentation to capture attention. But the images or illustrations to use for the bulk of the presentation should show positive, direct actions to take. Showing people what to do by demonstration and practice is the most effective tool in compelling action.

(10) Constant Repetition and Reinforcement of Messages

There is a lot of disaster safety information to share with the public. The challenge to those who share this information with the public is to remain consistent with the recommendations included in this paper earlier: to limit the number of messages with each presentation as not to be overwhelming, and to keep messages concise and clear.

The following steps are recommended to deal with the challenge of providing large amounts of information:

- First, determine the audience's level of awareness of the hazard. If they are in basic denial and do not believe that the hazard can even happen where they are, then begin there and raise awareness.
- Once people begin to think that the hazard can happen *to them where they are*, they then begin to ask the question, "So what can I do about it?" That is when the first safety recommendations should be offered. Remember, start with simple recommendations that require little time or money to do. Then, when the audience feels successful with those recommendations, offer more information at a later time, or in more detailed materials.

- Some presenters select a wide variety of materials to distribute because they think it looks good, makes them look more prepared, or makes their organization look good. However, giving out a large number of printed materials can easily overwhelm the audience, and result in a lot of waste. Not only is it important to be careful about choosing the right number of messages to give out, one should be selective in choosing the volume of print materials that go with it. Generally, two to three brochures are sufficient for a short presentation. Giving concise, short pieces will usually result in members of the audience actually using the materials. If a short document and an in-depth document about the same subject are distributed during the same presentation, the audience becomes understandably confused about which document is more important, or which one they should read, and often only look at the one with the most pictures. If the intent is to offer supplemental materials, mention that during the presentation, and make them available on a table in the back of the room. People who go out of their way to pick something up will likely use it.
- Finally, research has shown that adults learn better by receiving information in small amounts over time, not all at once. Plan several repeat visits to identified audiences to share information that will grow increasingly more complex over time. Further, it has been shown to be highly successful to have one agency representative provide information in a first visit with an audience, and a different agency representative provide information in a second visit, as long as the information in each visit is consistent and the second visit builds on the information presented in first visit. (This is another reason why coalition activities are more successful than independent efforts.)

(11) Children

Professionals in the emergency management community have observed how children have influenced behavioral change in their parents through education received in school, such as “stop smoking” and seat-belt use campaigns. There is a simplistic belief that if you provide information to children in school, they will bring the information home and encourage parents to change behavior.

The author contends that this approach is simplistic because, by itself, the notion does not account for the pressure that teachers are under to meet requirements of the school district and state for their students to achieve proscribed standards of education for their respective grade level. Contrary to popular belief, there are *no* national standards of education which are adopted by all schools. Local school districts and

states adopt their own standards. Often they follow national models from professional education associations, but the models and local/state standards vary widely.

Providing preparedness education materials to teachers to distribute to students, or having guest lecturers from the fire department, emergency management office, or Red Cross chapter does not usually address this standards-driven environment.

Usually, disaster safety materials are considered “another program” to be followed in an already burdened classroom agenda, and for that reason, are not included, adopted, or used as much as the emergency management community would like.

What has proven successful is to develop lessons and hands-on activities that help the teacher accomplish education standards requirements *through* learning about natural and human-caused events. The American Red Cross *Masters of Disaster* curriculum and the National Fire Protection Association’s *Risk Watch* materials are both designed in this manner. For example, if a teacher has to meet a mathematics standard for children to learn how to compute the area of a rectangle and volume, then a child can measure the width and length of the playground, and using a rain gauge, compute the depth of water that fell onto the playground in a recent rainstorm. The child can then compute area and volume, which can lead to a discussion of how much water is required to develop a flood. Subsequently, flood safety information can be included. No formal presentations from an external agency representative is necessary, thus allowing many teachers to use the materials and reach more children.

Children can and do play a very important role in reinforcing positive disaster safety behavior in their families. Providing materials that help teachers meet curriculum standards through hazards, rather than providing information about hazards alone, is much more successful, and proven to be more widely used and adopted by educators.

(12) Conversation

According to Dr. Dennis Mileti, retired Sociology Professor and former Director of the Natural Hazards Research and Applications Information Center at the University of Colorado at Boulder, one has to get people to engage in ongoing *conversations* about disasters and preparedness for them, which keeps the momentum going and actually encourages proactive and protective behaviors. According to Dr. Mileti:

“Risk information is communicated. And if it is good risk information, it can accomplish *only one thing*. That the people who receive it find it salient enough that they begin talking it over with other people. They try to get more information. They hang out in their back yards, and in the bars, and in their coffee shops to see what other people are doing. If it is a culture in which television is available they put on the TV. If there are newspapers, they look in the newspapers. If there are corner Red Cross offices where they can go and find additional information, they go and try to find additional information. That's the most risk information can possibly hope to accomplish.

“However, getting people to talk about risk in a linear sequence eventually leads people who talk it over to form very personal and very individual ideas about the risk they're exposed to.

“Perceptions about personal risk then guide human behavior. And it's out of those personal ideas about what risk we as individuals we face from which behavior follows suit. The process is that simple; it is laid bare. And it's what makes us human. And it describes how we are able to get on airplanes believing that our plane won't crash. It describes how we are able to hear information about future risk to earthquakes, tsunamis, and volcanic eruptions and not engage in protective actions. And it describes our sexual practices. The most fundamental thing about effective risk communication is that it is a social process and not an act. There is no one document, there is no one statement, there is no one communication that is going to change anybody's mind or change anybody's behavior.

“Effective risk communication is a conversation, once begun, that should not end. It is imperative that preparedness educators foster ongoing discussions,” ... which, when continued, will foster better disaster preparedness and mitigation activities.”

SUMMARY

Preparedness education is not “owned” by anyone or any organization. It is a *process* that should encourage conversations, over time, among ordinary people. Education by definition involves behavioral change. Changing behavior takes time, and getting people to change behavior when they do not feel compelled to do so (due to denial), is very challenging. Preparedness education is not a “one-shot” deal. You can’t simply give someone a brochure and believe they will read it, understand it, and do what’s recommended. Educational efforts work best through repetition, through coalition activities, and through consistency of message about the requested actions to take. Keeping the Twelve Cs in mind when planning and conducting education and outreach efforts will result in success. The successes aren’t easily measurable, because one can not measure the number of people who are not injured or killed, or the amount of property that was not damaged because someone did something recommended through preparedness education efforts. But through consistent, clear, and repetitive efforts, one can see the results over time in how many people state that they understand—and better yet, internalize and act on – preparedness education messages.

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