

Instructional Programs to Encourage Family Involvement

Teaching Preparedness: "Before the Hurricane Strikes"

The past 30 years have been marked by a demographic shift that has moved millions of people into coastal zones vulnerable to hurricane winds and floods. Many of these new coastal residents bring with them little or no experience or knowledge of the destructive potential of hurricanes.

John Sanders of Sanders Scientific Enterprises in Marina, California, has developed an approach to improving public awareness of the hurricane hazard based on fundamentals of how people learn and remember. While with the University of North Carolina Sea Grant College Program, Sanders put together an instructional package for schools. The kit, entitled "Before the Hurricane Strikes," includes an 18-minute videotape and a teacher's guide with selected hurricane readings and suggestions for a variety of educational activities and exercises.

In developing the educational program in North Carolina, Sanders considered the following features to be important:

- **Simplicity:** Any material developed for the public should be easy to comprehend and apply.
- **Learning about the physical processes of the hurricane should take place.**
- **People should become familiar with appropriate preparedness measures.**
- **People should be able to retain and recall this knowledge with accuracy at a later time.**

A hurricane safety checklist was devised to aid students in developing their own family hurricane preparedness plan. The checklist, which is in the form of a "dichotomous key," requires each student to make two yes/no decisions. When this is completed, the student is guided into a planning process. Each planning phase begins with a statement outlining the potential risk that the student and his family might face if a hurricane threatens. The student then uses the checklist as a guide in preparing a family hurricane preparedness plan.

The concept of the checklist and family plan was initially tested with 40 eighth-grade members of the Pamlico Junior High School Science Club in Bayboro, North Carolina, during the 1982-83 school year. To complete the exercise, students consulted with parents, teachers, and local officials, including the County Emergency Management Coordinator and the Soil Conservation Officer. Thirty-seven of the students traveled to Raleigh and slept on cots at Wake County Red Cross Headquarters, as they would if a hurricane forced evacuation of Pamlico County. The trip was the subject of several stories in newspapers and on television and radio. One cable TV station later produced a special based on the project, while the state's largest newspaper used it as a lead for a story on hurricane preparedness.

Dick Simmons was director of Pamlico County Emergency Management when the junior high school undertook the hurricane project. "So many people in rural areas like Pamlico County say, 'we're not going to get hit.' But when their kids come

home with knowledge about wind speeds and tide surge, they begin to realize what they need to do," he said. Simmons participated in a workshop with the students on County hurricane evacuation plans. In fact, as a result of working with Sanders and the Pamlico Junior High School project, he decided to revise the county's hurricane evacuation plan because it left unclear the point at which evacuation would be ordered.

While completing the hurricane safety checklist is a relatively simple task, the exercise is valuable because the students not only take a look at the checklist, but also involve their parents in the process. "One student learned for the first time that his grandparents' house had been destroyed during the 1933 hurricane and his father was carried from the house on his bed by the storm-induced tide," Sanders said. "These things had never been discussed until the son brought home the assignment to complete the family hurricane preparedness plan."

Sanders observed that bringing families into the discussion has an additional benefit. "People with pre-existing notions of how they would deal with a hurricane respond more effectively when a hurricane hits," he said.

Through his research, Sanders has found that parents will take the time to answer a child's questions about the checklist and to help make decisions about important elements of the family hurricane preparedness plan. "About 80 percent of the students who take home the assignment complete the plan with the help of their parents," Sanders indicated.

The core of the educational package is an 18-minute videotape that uses newsreel footage and interviews with an emergency official and a survivor of Hurricane Hazel in 1954 to illustrate the destructive force of a hurricane and to put the devastation in human terms. The kit, which also includes the teacher's guide, is available for purchase or rental from the Educational Media Center, 2318 D.H. Hill Library, North Carolina State University, Raleigh, North Carolina 27650.

Educational Program Encourages Students to Seek Hurricane Precautions

A rate of growth equal to about seven times the national average has resulted in "hurricane-aware-less-ness" for 80 percent of South Florida's population. This growth rate, with the burgeoning of capital developments along South Florida's hurricane-vulnerable coasts and past coastal mismanagement practices, has stimulated the development of a two-phase instructional model designed to create an awareness of the area's hurricane problem. The model—identified by the acronym CALM, for Cognitive and Affective Learning Model—has been developed by meteorologist Howard A. Friedman of the National Oceanic and Atmospheric Administration's Atlantic Oceanographic and Meteorological Laboratory Hurricane Research Division, where it is undergoing proof-of-concept testing.

Improvement of the public's ability to respond to a call for action to survive a

landfalling hurricane is but one objective of the program. Increased hurricane awareness is expected to encourage an informed citizenry to participate in certain precautionary local, state, and national governmental processes. Such processes, for example, would be limiting the development of coastal and ecologically sensitive storm-vulnerable areas; strict enforcement of building codes, zoning, and setback requirements; and the provision of local facilities for disaster prevention and public safety.

The cognitive phase of the CALM model uses a simple computer-assisted instructional technique to guide each student through a series of learning units about hurricanes as a geophysical phenomenon, and about precautionary public policies that can be adopted to mitigate the effects of future storms. However, the self-paced program can be easily adapted for use without a computer.



American Red Cross photo

Friedman uses actual newspaper editorials, news stories, and radio and TV tapes that trace the efforts of groups of local citizens who are fighting to limit development of storm-vulnerable areas. This "current events" material illustrates steps that can be taken to protect areas from hurricane-associated dangers before the threat is imminent.

Once students demonstrate mastery of the material in the cognitive phase of the instructional model, they are ready to progress to the affective phase, which explores the dynamics of the social and political processes at work when a community faces the prospect of a landfalling hurricane. Here, students assume the roles of some of the main actors in such a drama: the mayor; emergency management coordinator; police chief; a business leader or hotel/tourism industry representative; and a member of the media, to name a few.

During the simulation, they are presented with a realistic hurricane scenario and asked to react according to their perception of how the person whose role they are playing would act, given the information at hand. After the exercise, a teacher helps students process the information they have gleaned through participation in the simulation. Friedman says that one common misconception can be cleared up right away: "Students generally think that once a storm is detected, people first begin to make plans. Most students are unaware of the long-range planning that precedes the hurricane season, and that hurricane plans are already in place," Friedman explains.

The CALM model is intended for use primarily with students in secondary schools and above, and not just in science

classes. Friedman explains that the CALM model looks at the hurricane from a number of different perspectives. A social studies teacher could use the program as a bridge to demonstrate how local disaster preparedness decisions are made, or to explore interrelationships between local, State, and Federal governments. An English teacher could use the same exercise to look at the role of the journalist, and to fashion strategies for effective communications. A psychology class might focus on how people react in a crisis and discuss how they can be encouraged to take a threat seriously, and to take appropriate actions without panicking. And finally, the science teacher could use this geophysical event--a hurricane--as a window on science, mathematics, and technology.

While the material is written for use in South Florida communities, local information could be substituted for use in other areas. If proven to be an effective teaching tool, Friedman said the CALM model may eventually be adapted for use in awareness programs for other natural and manmade hazards. Right now, the program is still being tested by NOAA, and Friedman is working on a guidebook to accompany the instructional package.

"We want to enhance not only awareness, but we want students to think about things and participate in decisionmaking processes that can have a real impact on their routine way of life," Friedman said. The idea is that students will bring home new information about the hurricane danger and, with their parents, develop their own family hurricane action plans. That concept is central, Friedman says, because research in the behavioral and social sciences indicates that people are more likely to follow decisions they help to formulate.

Developed by the Federal Emergency Management Agency with the cooperation of the National Oceanic and Atmospheric Administration's Atlantic Oceanographic and Meteorological Laboratory Hurricane Research Laboratory.