

# Disaster Preparedness for Schools

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Schools need to have a disaster plan in place before a natural calamity strikes.

**O**n May 1, 2003, 198 students 7 to 16 years of age were trapped under a pile of rubble following an earthquake in southeastern Turkey. They had been sleeping in a four-story dormitory of the Celtiksuyu Boarding School when the quake hit. Two days later, 60 students were still buried beneath the rubble, 45 bodies had been recovered, and no more cries for help were heard. The parents immediately filed a lawsuit against the dormitory's builders. The prime minister vowed to hold responsible both the builders and those who failed to inspect the building. Ironically, the school's teachers lived in a nearby building that was largely undamaged.<sup>1</sup>

In far too many cases, disasters such as this must happen before school administrators seriously consider appropriate preventive measures. Yet, Proverbs urges the wise to learn from the ants, which store their winter provisions during the summer time (6:8).

In this case, the risk was well known. Previous earthquakes had killed thousands of people only a few miles away.<sup>2</sup> Yet, only one of the school's residences was built wisely; the other might as well have been built on the sand (Matthew 7:26, 27).

Disasters are a serious threat to schools worldwide. In order for educators to prevent and manage disasters, they must have a basic knowledge about what to expect.

But first, a definition: Disasters are major crises that result in damage to property, sickness, injury, and/or death and that cannot be prevented or managed through applying standard protocols or resources. Disasters come under three categories: natural, non-natural (including manmade), and other, such as infectious disease outbreaks.<sup>3</sup> This article will give a brief outline of the essentials for disaster preparedness and emergency response plans.

**Natural disasters:** Unpreventable and largely uncontrollable, natural disasters often occur

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with little warning. They include floods, earthquakes, volcano eruptions, mud slides, and windstorms.

- Because of deforestation, urbanization, and the consequences of El Nino, *floods*—which cause 30 percent of disasters worldwide—have been increasing more rapidly than any other type of disaster.<sup>4</sup> Floods can cause severe loss of life and property. The threat is increasing due to the high concentrations of people living on alluvial plains.<sup>5</sup> Recent floods in Vietnam, Russia, and Kenya killed a total of at least 109 school children, submerged more than 690 schools, dam-

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aged some 100 educational institutions, and kept almost 157,000 students out of school for an extended period.<sup>6</sup> However, this toll could have been reduced, as meteorologists and hydrologists can now predict floods with a high level of accuracy.<sup>7</sup>

- *Earthquakes*, generally regarded

as the most terrifying and ruinous of all forces of nature, have also taken a toll on schools. Three months prior to the recent earthquake in Turkey, children in China's Xinjiang province were injured and killed as their school buildings collapsed from a quake, which destroyed or damaged 900 classrooms.<sup>8</sup> On October 31, 2002, 26 students and one teacher in San Giuliano, Italy, were killed when an earthquake struck, leveling their school.<sup>9</sup>

Compared to other disasters in Asia in the 1990s, earthquakes caused the most economic loss.<sup>10</sup> Many cities

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in developing nations such as Lima, Peru; Santiago, Chile; Quito, Ecuador; and Caracas, Venezuela, are especially vulnerable. They lie on or near dangerous fault lines, and their residents are generally unable to afford structures that can withstand the damage.<sup>11</sup> Even in wealthier countries, evidence suggests that building schools on firm ground and/or adding structural reinforcement could have averted tragedies.

- *Violent volcanic eruptions*, especially those leading to lava flows, mud streams, clouds of volcanic gases, and even tsunamis can leave a trail of death and destruction. In January 2003, lava from a volcano 10 miles north reached the center of Goma, the most populous eastern city in the Democratic Republic of Congo. About 20 percent of the city was wiped out, including 45 schools, and more than 100 people were killed. Similarly, a mudslide in Tajikistan in August 2002 seriously damaged a school and killed 24 residents in one mountain village.<sup>12</sup> Experts can use

data about previous eruptions to forecast volcanoes and lava flows. Magnetic fluctuation and unrest by animals helped forecasters predict an eruption in Hawaii with surprising accuracy.<sup>13</sup>

- *Mud slides* may be predicted by monitoring the natural disasters that provoke them, such as floods. Fighting deforestation and soil erosion, as well as avoiding construction in dangerous areas (such as locations downhill from rivers) are several ways to prevent schools from being inundated by mud slides.

- *Windstorms*. Windstorms' serious danger to schools worldwide can also be minimized. In the 1990s, floods and windstorms were not only the most frequent disasters in Asia and the Americas, but they also killed the largest number of people. Windstorms were the most frequent disasters in Oceania, and they affected the greatest number of people in both Oceania and Europe. Compared to other disasters, windstorms caused the most economic damage in Africa,

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41 percent of economic losses in Oceania, and half of the reported economic damage in the Americas.<sup>14</sup> For example, Hurricane Hugo damaged 51 of the 72 schools in Charleston, South Carolina.<sup>15</sup>

- *Tornados*, whose wind velocity can top 200 miles per hour, originate from violent thunderstorms. Schools can prevent tornado injuries by developing "redundant warning systems"

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such as shelters, appropriate drills, and media alerts.<sup>16</sup>

- *Hurricanes* are powerful storms originating from the Atlantic, whereas typhoons come from the Pacific Ocean and China seas.<sup>17</sup> The greatest damage to life and property from hurricanes or cyclones—whose winds may reach 300 km/h—actually result from tidal waves and flash floods. These may severely affect food availability by destroying standing crops as well as food stocks. However, radar, satellite data, and even warnings from airplanes are helping forecasters predict hurricane severity and their likely path of destruction.<sup>18</sup>

**Non-natural disasters:** Schools are also threatened by non-natural disasters. In the 1990s, Europe was the only continent where non-natural disasters caused more deaths (58 percent of the total) than natural disasters. Half of these deaths were due to transportation accidents.<sup>19</sup>

**Manmade disasters:** One of the greatest concerns for schools is acts of war, including torture, taking of hostages or prisoners of war, invasions, hijacking, and terrorist attacks.<sup>20</sup> While such acts against children may have been unthinkable years ago, recent experience shows that children, because they are highly prized by their families, have become a target of violence.<sup>21</sup> One particularly deadly manmade disaster is bio-terrorism, which may involve chemical, biological, or radiological attacks.<sup>22</sup>

Students and teachers may get caught in the crossfire when war breaks out. In September 2002, 160 students—mostly Americans—and 39 staff members at an international missionary school in Ivory Coast were stranded inside as rebels and government soldiers waged war outside. Mortars flew overhead, and 50 mm shells exploded against the walls.<sup>23</sup> Before violence escalates, policies should be in place to help officials decide when evacuation is in order.

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**Other:** Other preventable disasters that may affect school communities include transportation-related accidents, structural damage to schools, infectious disease outbreaks, fires and explosions, and serious air pollution problems.

### **Disaster Preparedness and Emergency Response—The School's Role**

Schools can play a very significant role both in responding to and preventing disaster. They can offer trained professionals to help the com-

munity in the process of recovery. In Charleston, South Carolina, the school's maintenance employees agreed to work 12- to 15-hour days following a hurricane even though they themselves had no home.<sup>24</sup>

Schools also provide a place for children to receive counseling and treatment. After September 11, 2001, one study shows that 58 percent of American children 4-18 years of age received in-school counseling for disaster-related issues.<sup>25</sup>

Schools can function as a source of volunteers and a means of raising funds for the community. Following Hurricane Andrew, schools functioned as the primary social institution in their community. Teachers provided lessons and after-school activities in Red Cross shelters and relief camps. The Dade County, Florida, school system helped secure \$11.5 million in federal funds to keep schools open during the summer and

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## Important Things for Schools to Do or Have on Hand for Emergencies

- Develop a disaster preparedness and emergency response plan.
- Reinforce buildings if needed.
- Conduct periodic drills.
- Train teachers to perform first aid and recognize warning signs of suicide as well as indicators of post-traumatic stress disorder.
- Advise students about wading or driving through water where power lines or other hazards lurk.
- Develop policies that take into consideration children with special needs.
- Keep on hand stocks of food, water, first-aid kits, flashlights, battery-powered radio and extra batteries, duct tape and scissors, plastic sheeting and towels, and a working telephone or two-way radio (walkie-talkies).

to expand library hours.<sup>26</sup> In Iowa, the school community donated time to make sandbags, cook meals, and assist the Red Cross at shelters in a variety of ways, and the Ottumwa Education Association donated \$2,000 for flood relief.<sup>27</sup>

### Instructions

A school emergency and disaster preparedness plan should include the following:

1. *Risk assessment:* Identify and correct hazards such as poorly constructed buildings, places where water may erupt during flooding, and fire hazards.<sup>28</sup>
2. *Teacher preparation:* Teachers need to learn how disasters affect children and how to respond to children's questions and anxieties.<sup>29</sup> They need to help children understand potential dangers in their environment such as landslides, floods, falling objects like trees and high-voltage cables, and airborne hazards propelled by high winds.<sup>30</sup> Teachers should also

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be able to recognize in their students the warning signs of suicide and post-traumatic stress disorder (PTSD).<sup>31</sup>

3. *Preparing students:* Research shows that children who have been adequately prepared are likely to suffer only minimal and short-term reactions to disaster. Self-efficacy, social support, and intellectual understanding will help adolescents cope.<sup>32</sup> Preparedness through practice, especially using drills, helps children know how to respond to various disasters.<sup>33</sup>

4. *Alert and evacuation:* Before an emergency occurs, contingency plans should be clearly spelled out. Plans to shelter-in-place should be made and communicated to all employees. Teachers and staff should be trained to evacuate students and turn off utilities.<sup>34</sup>

5. *Search, rescue, and first aid:* Teachers, staff (including the school nurse), and even students should be taught first aid, as uninjured survivors may be the only help for some time after a disaster.<sup>35</sup> Such training should include identifying necessary emergency medical service and proper use of basic equipment.<sup>36</sup>

6. *Returning to buildings or homes:* Before people return to buildings following a disaster, experts and/or staff should ensure that there are no structural hazards, gas leaks, or live electric wires. No candles, torches, or gas lanterns should be used; rather, people should return during the day and/or utilize battery-powered flashlights or lanterns.<sup>37</sup> Schools should keep on hand waterproof gloves, rubber boots, and disinfectant, and maintain an up-to-date list of volunteers for clean up.<sup>38</sup>

7. *Coordination and communication:* This may be the most important area in writing policy. Schools should spell out how service providers<sup>39</sup> should be organized.<sup>40</sup> It is also important to determine ahead of time how to communicate with parents and the community.<sup>41</sup>

8. *Role of school buildings:* How will the school buildings be used during and following a disaster? People may want to use the campus as a temporary shelter. However, this may hinder the school's ability to provide instruction.

9. *Helping the most vulnerable:* At each step, policies need to take into consideration children with special needs or in vulnerable populations.<sup>42</sup>

### Supplies to Stock

The school should keep the following items on hand: medical, food and water, and other general supplies:

1. *Medical:* bandages and antiseptic, splints, oxygen, oral airways, suction, cervical spine stabilization, and anaphylaxis kit with epinephrine.<sup>43</sup>
  2. *Food and water:* Ready-to-eat foods that do not require refrigeration, and one gallon of bottled water per person should be stored at the shelter-in-place. If bottled water runs out, water in a toilet tank may be boiled and consumed.<sup>44</sup> Food rations for an extended disaster situation should include a staple such as cereal, a source of concentrated energy (fat), and a source of concentrated protein. Use the following rules of thumb to estimate requirements: (a) 1,000 people can be sustained on 16 metric tons of food per month, (b) two cubic meters is needed in order to store one metric ton of food.<sup>45</sup>
  3. *General:* First aid kits; flashlights, battery-powered radio and extra batteries; duct tape and scissors; plastic sheeting and towels; stove and fuel for boiling water, a working telephone.<sup>46</sup>
- Long-term disaster response:** Disaster experts and educators with experience in natural disasters point out that: "emotional scars, logistical

nightmares, financial problems, and red tape that follow such an event can persist long after the relief workers have departed and the television cameras have gone.<sup>47</sup> The disaster coordination team should re-organize itself to deal with such problems once the emergency is over.<sup>48</sup>

*Identifying those most at risk:* The school staff should play a key role in monitoring children's behavior, performance, and particularly their negative reactions.<sup>49</sup> For example, teachers should watch for the warning signs of depression and suicide.

**C**hildren who are closest to the disaster, who are affected more severely, who receive little social support, or whose lives are most disrupted are more vulnerable to emotional stress.<sup>50</sup> Children with serious health conditions may also be more psychologically vulnerable. In one study, asthmatic children

showed a significantly higher level of distress following a volcanic eruption.<sup>51</sup>

*Counseling:* If you have a large group of disaster survivors, provide group treatments as the first line of therapy. Divide by gender, in groups of six to eight.<sup>52</sup> After Hurricane Hugo, the use of Catastrophic Stress Intervention (CSI), a long-term psychosocial nursing assistance designed with precise protocols for small and large groups, significantly decreased adolescents' mental anguish in an easy and cost-effective manner. Its researchers found that the first 12 to 24 months following a catastrophic event was the best and most economical time for intervention.<sup>53</sup>

*Community challenges and recovery:* Since the school provides an ordered and natural environment for children, it should function as a key community resource for crisis intervention.<sup>54</sup> First, students should be allowed to explore their own feelings and

thoughts relating to the disaster. Some schools have even developed their own situation-specific curricula.<sup>55</sup> Second, the school can act as a resource for the community's recovery. School officials with experience in this area agree that getting the school functioning again is of utmost importance to regaining normalcy for the community at large.<sup>56</sup> For Christian schools especially, working with the community to recover from a disaster provides a great witnessing opportunity as well as a good way to train students for community service.

Although schools and their communities have historically worked together toward recovery, outside assistance has also been helpful. Following a flood in Valmeyer, Illinois, the entire town cooperated to restore the school system. They dug 850 holes in which they set up concrete piers for 30 portable classrooms.

School officials should not hesitate to request assistance early on, as

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needed. A good first step is to ask a donor to send an expert to assess the damage and create a reconstruction and rehabilitation program.

Disaster recovery depends on the population's access to relevant information, readiness for the event, the environmental conditions that reduce or increase vulnerability, and the availability of insurance, savings, and other resources.<sup>57</sup> All schools and their communities will face challenges in the areas of communication, transportation, finances, and clean-up.

The disaster coordination team needs to have on hand a reliable

means of communication "it's best not to rely on the telephone, since lines may be down."<sup>58</sup> Although food supplies may be close by, they may be difficult to obtain due to transportation, communication and distribution problems, or lack of money to obtain food.<sup>59</sup>

*Conclusion:* Despite the enormous challenges that disasters bring, some schools have transformed obstacles into opportunities. Following a hurricane, Dade County, Florida, school officials developed a \$25 million initiative to weave educational reforms, including a competency-based curriculum, into the process of recon-

struction. The new schools offer preschool services, before- and after-school programs, family resource centers, and a multitude of other social services. They proved that visionary school leaders can combine a rebound from disaster with increased government efficiency and add a proud chapter to the school district's annals.<sup>60</sup>

Advancements such as new software that measures the magnitude of approaching earthquakes offer new hope for preventing injury and death in schools. With such equipment, a school located 35 miles from an earthquake's epicenter would have a

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15-second alert; during this time, students could move away from windows and tuck themselves underneath their desks.<sup>61</sup>

However, our greatest hope is the Lord's promises: "In times of disaster they [the blameless] will not wither; in days of famine they will enjoy plenty" (Psalm 37:19, NIV). "If you make the Most High your dwelling—even the LORD, who is my refuge—then no harm will befall you, no disaster will come near your tent. For he will command his angels concerning you to guard you in all your ways; they will lift you up in their hands, so that you will not strike your foot against a stone" (Psalm 91:9-12, NIV). Though disaster may come near, as believers we need not be afraid, but rather trust in the Lord and learn from the wisdom of His Word and His creation. ✍



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