# The impact of the Canterbury earthquakes on schools and school leaders: Educational leaders become crisis managers

Carol Mutch
*The University of Auckland, New Zealand*

**Abstract**
*The 2010/20111 Canterbury earthquakes provided the opportunity to reflect on the role of educational leaders in crisis contexts. This article draws material from a wider study which followed a range of school communities as they responded to, and began to recover from, their earthquake experiences. The focus in this article is on (a) what we can learn from how school leaders internationally have responded to similar disasters, (b) how a leadership role changes in a crisis context and (c) how those in leadership roles in four Canterbury schools met the challenges they faced. The article draws this material together to discuss how educational leaders, their leadership teams and their organisations might prepare for such unexpected events. One of the key findings is that the inclusive culture of the school and the strength of the relationships before the event will have a bearing on how well a school manages the crises they might face.*

**Keywords:** *Educational leadership; crisis management; disaster response and recovery*

## Introduction

In 2010 and 2011, the author faced a series of devastating earthquakes in and around her city of Christchurch, Canterbury, New Zealand. As a former teacher and teacher educator in the city, she took particular note of the role played by schools in disaster response and recovery. With funding from UNESCO and the University of Auckland she undertook a study of five school communities entitled "Christchurch schools tell their earthquake stories". Several themes from the findings have been published elsewhere, such as those relating to children (Mutch, 2013) and teachers (Mutch, 2015a). This article draws a further theme from the data – how school leaders became crisis managers as they led their schools through the disaster aftermath. The article has three parts. Part A is a review of the literature on the human impact of earthquakes, in particular, on schools and school leaders. This is followed by Part B, a summary of the crisis leadership literature which sets the scene for later discussion of the findings. In Part C, the Canterbury earthquake study is put into context before the school stories are presented in sequence, from immediate response to longer term recovery. The school stories and the earlier literature are then synthesised into a conceptual framework which outlines the phases and roles in crisis management.

## Part A: The impact of earthquakes on schools worldwide

While weather-related events are the most common natural disasters (Ferris, Petz & Stark, 2013), more people are likely to die in earthquakes and related events such as tsunami. Approximately 230,000 people died in the 2010 Haitian earthquake, another 270,000 in the Sumatran earthquake/Boxing Day tsunami of 2004, and approximately 80,000 people in each of the 2008 Sichuan and 2005 Pakistan earthquakes (Cohen, 2011; United States Geological Survey [USGS], 2012).

What differentiates earthquakes from other disasters is that they are unpredictable and uncontrollable. They are elusive, in the sense that the causes are hard to see but the effects are highly visible. There is no warning and no set endpoint. On-going aftershocks continue to cause physical and psychological damage long after the initial event (Ferris & Petz, 2012; Lazarus, Jimerson & Brock, 2003; McCaughey, Hoffman & Llewelyn, 1995).

An earlier review by the author (Mutch, 2014), canvassed the literature on the role of schools in disaster prevention, response and recovery. That review found that the largest body of literature focused on the role of schools in disaster risk reduction and readiness. Much less literature examined the role of schools post-disaster and even less on the roles of principals and teachers. The review for Part A of this article narrowed in on the experiences of schools, principals, teachers and students in earthquake-related disasters (including tsunami). Most accounts were first-hand and descriptive but collectively they contribute to our growing understanding of the human impact of earthquakes. This review does not aim to be comprehensive but the examples give a sense of the breadth of traumatic experiences that schools have faced in responding to, or recovering from, an earthquake. They provide a useful backdrop for examining the experiences of the Canterbury schools.

Accounts of the 2011 triple disaster in Japan provide an insight into earthquakes and their disastrous consequences. On March 11 2011, a magnitude 9 earthquake off the coast of Japan hit on a school day. While there were several hundred earthquake-related deaths, there were no school-related earthquake fatalities (Ferris & Petz, 2012; Ministry of Education, Culture, Sports, Science and Technology [MEXT], 2012). As Parmenter (2012, p. 8) comments: "Schools remained standing, and teachers stayed calm, reassured children and made sure they stayed safe."

While many coastal towns in Japan are prepared for post-earthquake tsunami, no-one predicted the wall of water that was to follow or the terror it would cause (Ferris & Petz, 2012; Japan Society, 2011; MEXT, 2012). Parmenter (2012) continues:

> Thousands of children saw the tsunami with their own eyes, and many saw their families, friends and homes torn away in the tidal wave of debris, cars, electricity pylons and water. Furthermore, the tsunami was recorded live on television by helicopter cameras, watched not only by adults but by hundreds of thousands of children and young people throughout Japan. Most of the footage shown as it happened has never been shown on television since, as it is too horrifying. (p. 7)

At the time of the tsunami, most children were still in school, although many younger ones were already on their way home. The tsunami warning made principals and teachers respond immediately. Most made decisions that were able to save the lives of their students. Children were evacuated to the top floors of their schools or to higher ground. Teachers then looked after cold, hungry, frightened children with no food, no water and no power until the situation coud be assessed. (Ema, 2013; Japan Society, 2011; Parmenter, 2012; MEXT, 2012; O'Connor and Takahashi, 2013).

When schools reopened, there were still difficulties to confront. At Matsuiwa Junior High School, for example, the buildings were in a state of disrepair with only intermittent electricity. The gym was used as a community support centre and temporary housing was built on the school grounds. The principal focused on creating a calm atmosphere and getting children back into regular routines. He noted, that despite everything, his teachers displayed a positive approach and were committed to caring for their students (Japan Society, 2011). Similarly, a teacher in the Parmenter (2012) study commented:

> I have lost friends and my home and most of my possessions, but I cannot have regrets forever. I am a teacher. We have to look forward, we have to recover and rebuild the community, and we need to be examples for the children to be positive and forward-looking… (p. 20).

The 2004 Indian Ocean Boxing Day tsunami, triggered by a 9.3 magnitude earthquake off the coast of Sumatra, was another 'megadisaster'. It spread across the Indian Ocean with waves over 10 metres high, reaching up to 7.5 kilometres inland in some areas, killing 227,000 people and displacing a further 1.8 million. In financial terms, the humanitarian aid mobilisation (over US$ 14 billion) was the largest ever international response to a natural disaster on record (Athukorala, 2012). Many researchers have since examined various aspects

of the disaster. A literature review on adolescents in emergencies (Cahill, Beadle, Mitch, Coffey & Crofts, 2010), for example, discussed several studies emerging from the disaster. One study assessed the long term impacts of the disaster on young people in Thailand. It found that a year after the event many still suffered from concentration problems, headaches, tiredness, nightmares and confusion. Community programmes, peer support and school connectedness helped alleviate stress; religion and education helped counteract feelings of loss.

In 1999, a series of destructive earthquakes hit the northwest part of Turkey, causing deaths of more than 17,000 people, and leaving tens of thousands of people injured, homeless and distraught. 1500 school buildings collapsed or were heavily damaged. A study (Akbaba-Altun, 2005) asked school principals what they had learned from their experience. Survivors faced on-going trauma and housing issues. The tasks the principals needed to undertake as a consequence of the earthquakes included: checking their schools for damage, cleaning up and repairing what they could, reporting the damage, and arranging alternative accommodation in tents and prefabricated buildings. They also attended to their school communities' social, emotional and pyschological needs. The principals' responses, however, were not all negative. They hoped that, in the long term, their regions could take the opportunity to build healthier, more contemporary and earthquake-resistant buildings, including safer schools. When schools reopened they tried to balance educational imperatives (the school curriculum and external examinations) with pastoral care. Continuing education under cold, draughty and difficult conditions proved challenging but they did not let this deter them. One principal concluded:

> We [educators] should reflect upon our experiences, we should provide them [students] hope for the future, because we are generous and self-sacrificing. Immediately we need to provide them with cheer and happiness as well as hope even though we are deeply distressed. These are the days to take the floor and show our humble and friendly charactersistics. (Akbaba-Altun, 2005, p. 311)

Yet, in 2003, despite earlier earthquake occurrences in Turkey, 85 students and a teacher died in another earthquake. A study (Ozmen, 2006) found that principals were not focused enough on earthquake mitigation and the researcher suggested an improved disaster prevention and preparedness culture in Turkey was necessary at all levels – government, community and school. The study concluded that training programmes were needed for principals, teachers, students and families. Schools also needed to build a community network so that any planning could be appropriately implemented.

In 1999, a 7.6 magnitude earthquake in Taiwan killed over 2,000 people, injured 11,000 and made over 100,000 homeless (Peng, 2010; Ryan & Tsu, 2011). US$10 billion worth of damage was done. Buildings all over the island proved to be very vulnerable, including schools. The disaster exposed the hurried and shoddy construction of the 1990s. Rescue groups from around the world joined local relief workers and the military in digging out survivors, clearing rubble, restoring essential services and distributing food and aid. Tent cities sprang up to house frightened residents. The disaster, dubbed '921', had a profound effect on the economy of the island and the consciousness of the people. In Wufeng township, the damage was particularly devastating. Guangfu Junior High School lay directly on the fault line and was severely damaged by the quake. Today the junior high school is the site of the National Museum of Natural Science's 921 Earthquake Museum.

In 2008, in Sichuan and neighbouring Gansu provinces, not only did over 80,000 people die but five million were made homeless and schooling was disrupted for 2.5 million children (Zhong, 2013). Access to schooling needed to be prioritised. Students facing examinations at the end of their primary or secondary schooling were the first priorities and were sent to neighbouring provinces or housed in prefabricated classrooms or tents. Vulnerable children were another priority, especially the 650 children who were orphaned by the tragedy. Child Friendly Spaces were set up in camps or temporary shelters to provide child protection and psychological

support for dislocated communities. These spaces provided day care for young children, informal education for school-aged children, life skills training for adolescents and support for parents.

Indonesia is another earthquake prone region. In 2006, 5,000 people died in an earthquake in central Java. Studies conducted several years later showed that up to 28 percent of students were still suffering significant psychological distress and teachers reported 17% more problematic classroom behaviour (Seyle, Widyatmoko & Silver, 2013). In comparison with the general adult population, teachers were to suffer similar rates of personal and material loss and while they reported lower levels of post-traumatic stress than the general adult population, many teachers still had high levels of distress. A small-scale intervention to support teachers yielded successful results. The researchers concluded, "If teachers are more adjusted following a traumatic event, they may be better able to support children in their adjustment process as well" (p. 398).

While earthquakes in themselves can be devastating, when they occur in a country already struggling to meet its residents' basic needs, the consequences can be even more dire. In 2010, a shallow 7.0 magnitude earthquake hit Haiti, killing approximately 230,00 people and injuring another 300,000 (Cohen, 2011; Margesson & Taft-Morales, 2010). Prior to the earthquake and the subsequent cholera outbreak, Haiti already had high levels of poverty and malnutrition. Only a quarter of the population had access to health care, 50 per cent to potable water and 10 per cent to electricity. A weak infrastructure, high levels of corruption and lack of building codes contributed to the high death toll and slow recovery. Prior to the earthquakes, education was "woefully inadequate" (Margesson & Taft-Morales, 2010, p. 23) with 55 per cent of children receiving no education at all. 1.5 million children were directly affected by the earthquakes, and almost 4,000 schools damaged or destroyed. Only a fifth of the relief camps set up any form of education post-earthquake (Biquet, 2013).

India has also suffered at the hands of recent earthquakes and their aftermath (Bangay, 2013). The 2001 Bhuj earthquake killed 971 students and 31 teachers and severely damaged over 11,000 school buildings. The 2004 Indian Ocean tsunami destroyed a further 360 schools and impacted on 450,000 students. In 2011, a 6.8 magnitude earthquake on the Sikkam/Nepal border caused huge disruption to schooling and students' external examinations. As in other developing nations, the events can have additional impacts on the schooling system:

> The impact of natural disasters goes beyond the tragic loss of life, the disruption of schooling and psychological trauma of survivors. Reconstruction costs can constitute a significant economic drain, with money being spent on maintaining rather than improving the education system. (Bangay, 2013, p. 67)

This brief review of the international literature highlights several themes. Earthquakes (and subsequent events such as tsunami, flooding or disease) can cause huge damage, disruption and dislocation and be very costly in terms of disaster relief, recovery and rebuilding. They can cause huge loss of life, especially where appropriate building codes are not instituted or enforced, and social, political or economic turmoil prevents maintenance of buildings, systems and infrastructure. On-going aftershocks cause continuing physical and psychological damage. When earthquakes happen during a school day, principals and teachers must make immediate decisions which can have life-saving or life-threatening consequences. Because schools concentrate large numbers of people, especially young and vulnerable children, in one place, an earthquake can cause major loss of life to school communities. As schools are located in centres of population, they often become post-disaster relief centres or hubs. When schooling formally resumes, principals and teachers are expected to return to work despite the post-disaster consequences in their own lives. Finally, as well as providing a sense of calm and normality for their students, principals and teachers are also expected to deal with the on-going and sometimes severe post-disaster social, physical, emotional and psychological trauma of their students, families and communities. In order to understand more about the roles of principals and teachers in emergency situations, the next section introduces the literature on crisis leadership.

**Part B: Crisis leadership in disaster contexts**

Boin, 't Hart, McConnell and Preston (2010) define crisis leadership as, "recognizing emerging threats, initiating efforts to mitigate them and deal with their consequences and, once the acute crisis period has passed, re-establishing a sense of normalcy" (p. 706). Crisis leadership differs from everyday leadership practices because of the immediacy, complexity, uncertainty and constantly changing circumstances. There is an emerging body of literature that has put crisis leadership theory to the test in disaster contexts. What follows are some useful examples.

The CEO of Marsh & McLennan faced the terrorist attacks on September 11 from his office inside the Twin Towers (Greenberg, 2002). As the tragedy unfolded, he chose to focus on four major areas: people, communication, operational issues, and business continuation. The focus on his people came first – establishing a family assistance centre, arranging grief counselling, keeping up the information flow, managing the media and, later, planning a memorial service. On reflection, he made four key observations: leadership has its place; culture comes to the fore; you need to be prepared to adapt; and people's well being comes first. He noted that while any planning they had done prior to the disaster did not prepare them for such an eventuality, it did still help that they had done some preparation.

A Vice President at BNY Mellon describes how Superstorm Sandy put her organisation's crisis management to the test (Kielkowski, 2013). She found that the essential matters in forward planning for emergencies include understanding the unpredictable nature of crises, being able to lead a decision making process, communicating effectively, taking the 'big picture' into account and looking for creative solutions. While being prepared is helpful, crisis plans are written at a time when the type of event is unknown. Being flexible and having realistic expectations are therefore key.

Murray Burton, a school principal, found himself leading his school through the death of six students and a teacher in a canyoning tragedy in New Zealand (Tarrant, 2011a, 2011b). One of his immediate tasks was managing the flow of information. He was asked by the police not to give out any information that was not confirmed by them. One way to manage the situation was for him to be the only one talking to the media. While doing this, he was also leading his own team through the emotionally-charged and quickly changing situation, arranging for the Ministry of Education's traumatic incident team to provide support to the school and families, and responding to the community's and the nation's outpouring of grief. In hindsight, what helped him manage the situation was the trust, respect and relationships that he had already established with his school community and that he was able to develop quickly with others.

Porche (2009) examined leadership failure following Hurricane Katrina. He noted that there were both crisis management and leadership issues to be attended to. Crisis management is more operational: diagnosis, decision making and resource mobilisation. Crisis leadership included oversight of crisis management plus a focus on the 'bigger picture' including providing vision and direction. Leaders needed "a complex leadership skill that require[d] integration of prior knowledge, leadership acumen and practical experience" (p. 23). Leaders also needed to be visible and accessible. His findings discussed knowing when to use and when to deviate from a crisis management plan, the emergence of both informal and formal crisis leaders, and how leaders managed complex tasks simultaneously. He also noted the importance of team work, communication, and the provision of post-crisis support and debriefing.

Also following Hurricane Katrina, ten front-line leaders involved in the storm's aftermath came together to share experiences (Rego & Garau, 2008). From this, they distilled things that leaders can do to prepare for a crisis. First, they need to appraise their personal strengths and limitations, hone the key sills they might need, build a network of strong relationships and create a culture of empowerment. During the crisis, leaders need to manage their emotions, make connections to shared values, be proactive, and act positively, sincerely and respectfully. While communication is important, in the end, however, leaders need

to understand that nothing may go according to plan – and what works at one phase of the disaster might not work at another.

These vignettes highlight the different needs in a crisis situation and how leaders must adapt and change to meet them. Certain skills and strategies are needed at each phase but it cannot all be left to chance and on-the-spot decision making. Prior preparation, in the form of building respectful relationships and a strong organisational culture, as well as emergency response and recovery planning, does appear to assist when leaders are under pressure. The study that follows resonates with many of the themes from the earthquake literature and the crisis leadership literature and offers further insights into crisis leadership in educational institutions in post-earthquake settings. The phases of the unfolding crisis, drawn from the literature cited here, will later provide a framework for describing the responses of schools and school leaders to the Canterbury earthquakes. The phases are: (a) pre-event preparation; (b) pre-event warning; (c) event; (d) immediate response; (e) short term response; (f) initial recovery; (g) medium term recovery; (h) long term recovery; and (i) reflection and evaluation.

## Part C: Educational leaders become crisis managers

### Background to the study

On September 4, 2010, at 4.35am a 7.1 magnitude earthquake hit the Canterbury region of New Zealand causing widespread damage to the city of Christchurch and surrounding districts of Selwyn and Waimakariri. The earthquake was to be followed by over 12,000 aftershocks over the next three years, including several over magnitude 6. The most destructive was at 12.51pm on February 22 2011. At magnitude 6.3, it was centred closer to the city of Christchurch with an upthrust of twice the force of gravity. It demolished the city's business district, killing 185 people and injuring thousands more (Canterbury Earthquakes Royal Commission, 2012; or for a more technical report see: Aydan, Ulusay, Hamada & Beetham, 2012). All educational institutions, from early childhood centres to universities, were closed for several weeks following the two major earthquakes of September 2010 and February 2011 (Education Review Office [ERO], 2013). As the region came to terms with the death and destruction, getting schools up and running again was a government priority.

The original purpose of this study was to support schools to record their earthquake stories for themselves, their communities and for New Zealand's history. Five pimary schools from different parts of the city participated and the data-gathering activities took place between May 2012 and May 2014. Given the sensitive nature of the post-disaster context, the approach was facilitative, participatory and open-ended. Participating schools could choose how they wished to record their story, who they wished to participate and how they wanted to disseminate it. Schools chose varying approaches from video-recording interviews and making a video documentary, transcribing audio-recordings and publishing a book, to designing and creating a community mosaic (see Mutch, Yates and Hu, 2015) for more detail. While schools owned the final product, the research team was able to use the raw data – interview transcripts, documents, drawings, photographs, video clips and recordings to undertake further analysis. In-depth interviews were conducted with the principals in four of the schools and this article draws on these interviews, plus interviews with teachers, students and parents, where relevant, to supplement the topic of crisis leadership in the post-earthquake context.

### Pre-event preparation and warning

Schools are required to have plans for emergencies and traumatic incidents. The Ministry of Education (2010a, 2010b) has a guide and set of resources to support schools to prepare for and cope with such events. The Ministry describes traumatic incidents as those that: cause sudden and/or significant disruption; have the potential to affect a large number of children and/or staff; create significant dangers or risks to physical and emotional well-being; and attract media attention. As well as major disasters, the Ministry notes that incidents can be smaller in nature and might not occur on site or during opening hours: "They can occur during a field trip or sporting event. Examples include sudden death,

serious injury, illness, violence, abuse and suicide" (2010b, p. 88). The guide suggests conducting a risk assessment, planning for differing events, setting up a traumatic incident team and practising possible scenarios.

There was no warning for the September 4 2010 earthquake but with it occurring on a Saturday morning, principals had time to visit their schools, check for damage, contact staff and consider what to do. The Ministry of Education closed all schools until they could be checked, cleared for re-entry, temporarily repaired or alternative arrangements be made.

While there was no warning for the February 22 2011 earthquake either, aftershocks were expected and many schools had reviewed their emergency procedures and could respond more confidently:

> ... we had a Twitter message that we could send out to families who [could] receive cellphone messages." (Principal B)

### Event and immediate response

The February 2011 earthquake happened in the middle of a school day. Most primary and early childhood students were on a lunch break. Principals needed to snap into action:

> I was just walking out into the playground and BANG! So the response from me was: 'Right, what do we need to do here? We need to make sure the children know where to go and to go there immediately and not back to their rooms'.  (Principal B)

They needed to assume control:

> I put on my principal's smile. Parents arrived and were standing outside. I realised then that I had an audience and my response needed to be calm and instantaneous. I had to look like I was in control. (Principal A)

School systems refined since September moved into gear. At School A, office staff were meeting parents at the gate and giving them the message that their children were okay and asking them to act calmly as they collected their children:

> The school was phenomenal. The children streamed out of the classrooms and down onto the field. The teachers were incredible. It was very prompt and calm. (Parent 1, School A)

Across Christchurch, teachers checked that children were accounted for and then comforted them until parents could reach them.

> We were just getting comfortable again [with aftershocks] when February hit. I knew that [my child] was at school and that school would know how to deal with it and look after him. (Parent 2, School C).

Principals, teachers and support staff waited until late that night until every child had somewhere to go before they could focus on their own families and checking the state of their homes:

> We had to wait until all the parents had picked up the children. I had one girl in my class whose mum didn't come for a very long time. As time went on, she got a little bit more worried, but I assured the kids that their parents were on their way and that there would be road blockages. (Teacher 2, School A)

### On-going short term response

After September 2010, schools were checked and repaired, or relocated, if necessary, over a period of several weeks. In the immediate aftermath, some school buildings were used as shelters and information centres. This was the case for School B:

> *We were set up as a Civil Defence base, so for the first week and a half there were families from not only our community but the other schools as well coming here to receive support from Civil Defence. There was an overnight area in our hall where people stayed…* (Principal B)

In February 2011, many more schools were damaged and many of those still awaiting repairs from September sustained further damage:

> *We obviously knew because it was state of emergency schools would be closed anyway. We had no power out here for two weeks at least because it was such a badly affected area.* (Teacher 2, School C)

Again schools were inspected and temporarily repaired. Where they were unsafe, alternative arrangements were made. Schools relocated, put up tents, shared sites, worked in shifts or set up community learning hubs (Education Review Office [ERO], 2013). More damage was caused to infrastructure, buildings and homes:

> *Our house – it's broken – liquefaction everywhere. We only stayed in Christchurch for two days because we had no power, no sewerage or water.* (Parent 2, School C)

There was considerable movement of families after the February earthquake, either temporarily or permanently. Over 10,000 students enrolled in schools in less damaged parts of the city or elsewhere in the country (ERO, 2013):

> *We've had a number of families move in – they've been through the earthquakes and at least one move … about 50 short term enrolments from the February quake.* (Principal B)

### Initial recovery

Prior to schools re-opening, principals kept in contact with their communities. School A reported that they wanted to create a sense of community for their school families to return to. Before the school re-opened, they were putting daily news on their school website so their community knew what was happening. To prepare teachers for the days ahead, principals organised opportunities for staff to get together:

> *We had a big debrief in the staff room. We had a chance to connect with the other staff to find out about all their different situations as some of the staff had lost homes and really suffered.* (Teacher 1, School A)

Schools also discussed what to do when the students returned:

> *We held a Staff Only day before school resumed. In the morning, everyone had the chance to tell their story and support each other. In the afternoon we talked about how we would support the upset and stressed children and parents. On reflection, this was quite a good process as we spent the whole week strategically thinking ahead and talked about the threats and issues for the school.* (Principal A)

Schools also discussed how children might want to process their experiences and how they might integrate this into the curriculum:

> *The earthquake had a massive impact on the children and there were also other trials in 2011. As teachers, we didn't really know how to deal with children after a natural disaster especially after they had had a month off school. So we were worried about how the children were going to be; were they going to want to write about it? And how would they want to process it?* (Teacher 3, School C)

School D's principal reported that while the September earthquake had varying impacts depending where people were that weekend, in February everyone in the school was in the same place and endured a shared

experience. The principal recalls many more tears and cuddles, of parents needing to talk, of strengthening relationships with her community. Being a lower socio-economic area where many families struggled meant the earthquakes caused further hardship. School D reopened weeks later not knowing what they might find:

> [When school resumed] we just made ourselves out there. We had a coffee morning straight away for the parents. We had lots of notices around the school saying, 'Kia kaha [Be strong], we're strong, we can work through this together.' (Principal D)

One teacher noted how important is was for the children to return to school and how relieved the schools were to see this reaction:

> "We had a preparation day where kids could come in and see the school was still normal. The kids were amazing, we couldn't get over it, like it was security for them, it was really good. (Teacher 3, School C)

Many donations were received from outside the region and these helped replace equipment, school uniforms and ensure that no children missed out:

> There were kids without lunches, there were kids without breakfast; we just fed them as the need arose. Kids were really tired so we would put cushions in the back of the room for them to sleep. (Principal D)

Once back at school, students reported that teachers were constantly reassuring them:

> After the February quake, the school organised a box full of beanies [warm hats] and safety blankets in the shed. It all felt a bit safer having the earthquake box in the shed under the school. My teacher made up a cellphone box. We put our cellphones in the box, so that if there was a really big aftershock, we could contact our parents, especially because lots of us have really young brothers and sisters.  (Student 14, School A)

### Medium term recovery

Schools tried to create places of calm and security:

> As a school we wanted things to get back to normal.  The teachers tried to create a place that was as normal as possible. The school was pretty undamaged, so that helped.  When the children returned to school we reinforced the key message that the earthquake was a natural thing and it just happens.  (Teacher 1, School A)

Teachers balanced their educational role alongside the pastoral care role. Principals noted that teachers put the children in the classes before their own personal situations and went out of their way to care for them:

> Teachers are great. I can't say enough about how much strength, how much integrity, how much they would go the extra mile to drop kids off, to look after kids in their classrooms after school, to buy them special treats, take them to McDonalds, all those sorts of things… (Principal D)

As the months passed, schools settled in routines as best they could. They made use of the range of community, government and non-government agencies to support students, staff and families. They were not just focusing on emotional and psychological support but very practical things such as collecting and distributing food and clothing or helping parents access services and advice:

> The help we have had has been from the churches. The churches have been amazing. Every church in this area – what they have done is just over and above, in so many ways.  (Teacher 3, School C)

In return, schools reported that the relationship with their communities had strengthened as they worked together to repair schools, homes, lives and the fabric of the community:

*From the experience of losing a school parent, we developed a real sense of community and doing things together, especially as the school parents were taking meals to the family who had lost their mother, for six months after the earthquake.* (Principal A)

### Longer-term recovery

Interviewing principals two to three years after the major earthquakes gave them an opportunity to take stock:

*So almost two years later, we are still positive, we are still giving positive messages. We are still advocating for the school… but our reserves are running out.* (Principal A)

Their comments still revealed schools dealing high levels of stress and anxiety in their communities:

*Teachers and staff are more aware to support the children emotionally than they have done in the past. They're aware that some children are in some very different situations in their homes – living in torn apart homes; some don't know where they are going to be living; some have been living in caravans – children don't always tell you these things. We've had to open up the communication lines even more with parents and children to make sure they tell their teacher.* (Principal B)

Principals and teachers were dealing with their own health, housing and family issues then arriving at school and supporting children and their families:

*All these teachers are quiet heroes. I know there are teachers here that have lost their homes and some of them are living in the same situation as we are and they come to work and they get on with it. They do their job as best they can and they never ever show their frustration to the kids.* (Parent 4, School C)

But it was taking a toll on their health:

*We know from all the international literature that this will stay with people. I've got colleagues who've been diagnosed with cancer, with stress related illnesses. They go to the doctor, get medical attention but still there has been a gradual decline in teachers' wellbeing.* (Principal C)

Principals also needed to look after their own wellbeing in order to be there for their schools. They needed to keep the big picture in mind as well as deal with the day-to-day:

*You need some calm time to stop, to talk to yourself about what has happened. To work out what you want to say and how you are going to say it. You are going to have to explain to children what will happen next and how things are going to get fixed. You need to find some time for yourself to reflect on everything.* (Principal B)

Schools became aware that everyone, children and adults, could react differently and might 'hit the wall' unexpectedly. Counselling services and support agencies would be needed for the next few years for staff, students and their families:

*So the counsellor would just go and pick them [upset students] up, walk with them and talk to them about their anger. We also had the library open for parents to go in and have coffee in the morning and just to talk. There could only be four or five of them but they could all sit in there. If they wanted to cry, they could cry. You know, they could do whatever they wanted to, out of our sight.* (Teacher 4, School C)

*Evaluation and reflection*

As time went by, people needed time to reflect:

> *We've got some really strong values and beliefs but now the children are thinking about living them a lot more than they had before the quakes – particularly 'arohanui', which is caring for people, being there for others and making sure that people are feeling okay or if they need someone to be with. They are really resilient and want to help.* (Principal B)

This included what worked well and what could have been done differently**:**

> *On the day [February 22], the leadership team kicked in and they were making sure the right thing happened. The training and up-skilling really worked for the school. They worked calmly and there was no personal heroism.  The deputy principal, the assistant principals and team leaders went and did what was needed at the time. The administrative leader, who is also part of the leadership group, knew to go to the gate and meet parents and tell them to stay calm.* (Principal A).

At the same time as being positive, schools were realistic about the time the city would take to be rebuilt:

> *But it's 10-20 years, they say, before we'll really see it completed. A long time. I say to these kids, 'You're going to be 30, I suppose,' and they go 'Wow!' and I think that realisation surprises them. What a different life for them.* (Senior teacher, School C)

In summary, schools played a pivotal role in supporting their communities through the earthquakes. Principals took on roles that went beyond a focus on educational leadership to dealing with an immediate crisis, managing their schools as post-disaster community hubs, rebuilding the fabric of their school communities and all the while being sensitive to the physical, emotional, social and psychological needs of their staff, students and families. Teachers had to balance their educational roles with their pastoral care roles. Relationships between schools and their communities were strengthened as a result.

## Discussion

The following phases from the earthquake literature in Part A, the crisis literature in Part B and other related studies (for example, Education Review Office, 2013; Fillmore et al; 2010; Rinella, 2007; Sachetta, 2014; Zhuravsky, 2013) along with the findings from the Canterbury earthquake study (Part C) have been synthesised into the table that follows. This outlines the phases of a crisis and the probable tasks that a crisis leader might face. These are broken down into (a) those tasks the leader has most responsibility for, (b) those that could be delegated to the senior leadership team and (c) those to be undertaken by the wider staff in the organisation.

The leaders' tasks focus on balancing immediate and critical decision making with the big picture and the long-term view. The tasks need to align with the values and vision, and encompass high level strategy, coordination, cohesion, communication, facilitation and a sense of community.

The tasks for the leadership team are to support the vision and actions of the leader, while undertaking their own delegated tasks, such as managing health and safety, personnel, resources or information flow across the phases of response and recovery. They also need to take a lead in ascertaining and providing the support needed for the staff within their teams while keeping information and communication flowing both ways. Team leaders need to be prepared to step up if the task becomes too great or crisis leader is unavailable for any reason.

Wider staff within the organisation need a sense of belonging to the organisation, an identification with its purpose and values, and to actively engage in decision making and community building. When

disaster strikes they will need to feel supported by the organisation to continue to engage in the response and recovery phases in order to get back to a sense of normalcy.

Although they are displayed in this way in Table 1, the roles and phases are not discrete. There will be areas of omission, overlap or addition, depending on the type and scale of the crisis, the function and size of the organisation, or the organisation's structure and culture.

Table 1. Phases of a crisis and crisis leadership roles and tasks

| Crisis phases | Tasks for leader | Tasks for the leadership team | Tasks for the organisation |
|---|---|---|---|
| **Pre-event preparation** | • Providing a vision<br>• Instilling organisational values<br>• Building relationships<br>• Reviewing and honing their skills | • Clarifying roles and responsibilities<br>• Supporting the leadership vision<br>• Showing a united front<br>• Upskilling as needed | • Conducting a risk assessment<br>• Crisis planning<br>• Crisis drills/ simulations<br>• Reviewing and refining strategies |
| **Pre-event warning** | • Communicating possible threat<br>• Reiterating plans and options | • Forwarding communication<br>• Actual or mental rehearsal of roles and responsibilities | • Putting mitigation strategies into action<br>• Preparing for response to event |
| **Event** | • Remaining visible<br>• Emanating calm<br>• Providing clear directions<br>• Keeping event in context | • Stepping in to planned roles<br>• Providing clear instructions<br>• Offering support | • Following directions or using discretion to find alternative routes or solutions |
| **Immediate response** | • Assessing damage and risk<br>• Making prompt decisions<br>• Communicating what is known<br>• Planning for next steps | • Assessing situation for which they have responsibility<br>• Providing information to leader<br>• Relaying information to others | • Checking own situation<br>• Reporting situation upwards<br>• Supporting others<br>• Avoiding creating panic and misinformation |

| On-going short term response | • Communicating regularly, both internally and externally | • Conducting a post-event needs assessment | • Coming together to make sense of the event and to support each other |
|---|---|---|---|
| | • Bringing leadership team together to review and plan next steps | • Attending to areas of delegation | • Accepting help where relevant |
| | • Working with the media | • Checking on all organisation's personnel | • Accessing grief counselling or other support as needed |
| | • Setting up systems or alternatives | • Organising relevant support for personnel | • Stepping up as required |
| | • Reiterating organisation's values | • Finding practical but creative solutions to problems | • Finding respectful and culturally appropriate ways to pay tribute to those lost in the disaster |
| | • Managing matters related to deaths, injuries and losses | • Mobilising and managing resources | |
| **Initial recovery** | • Keeping the big picture in mind | • Moving from response team leaders to recovery coordinators | • Finding practical ways to support those most in need |
| | • Coordinating the recovery | • Gathering data for forward planning and recovery timetabling | • Looking out for those not coping |
| | • Keeping organisation appraised of changing situation | • Dealing with short term response while thinking ahead about long term recovery | • Taking an active part in own and organisation's recovery |
| | • Showing empathy and respect for individuals | | • Understanding grief and trauma stages |
| | • Being accessible and willing to listen | | • Looking after self |
| **Medium to long term recovery** | • Returning to the organisation's mission | • Recording and documenting the event so that it can become part of the organisation's history and can inform future planning | • Creating new routines |
| | • Creating a sense of normalcy | | • Accepting that recovery takes time |
| | • Being realistic about recovery time | | • Keeping engaged and active |
| | • Building in own time out to reflect and recover | • Looking after self and leader | • Looking after own health |
| | • Making use of external advice and services | • Being positive but realistic | • Realising that people recover in different ways and struggle at different times |
| | | • Helping organise a permanent memorial | |

| Evaluation and reflection | • Acknowledging and accepting the event without unhelpful recrimination or rumination | • Formally and informally reviewing the successful outcomes and the aspects that could have been done better | • Finding ways to acknowledge the events and the losses yet move forward |
| --- | --- | --- | --- |
| | • Celebrating how far everyone has come | | • Building on the strength and resilience gained from the experience into the organisation's culture |
| | • Looking for opportunities that may come from the experience | • Reviewing and refining plans, strategies, roles and resources | |

The school leaders in the Canterbury earthquake study engaged in most of the tasks in this conceptual framework. They reiterated the values of their organisation, they simultaneously managed prompt decision making with longer term recovery strategy. They had already created strong organisational cultures and built on these as the phases of the disaster progressed. They kept people to the fore – their students, staff and families. Senior leaders, in the sense of senior teachers and teachers in general, supported the vision and values, stepped up when needed and managed the variety of tasks that confronted them. The wider organisation, in this case the school community, supported each other, found practical and creative ways to solve problems, kept positive and engaged actively in response and recovery, and in rebuilding the fabric of their wider communities and in bringing hope to their damaged city.

Both the literature (see, for example, Ozmen, 2006; Tarrant, 2011a, b) and the principals themselves reiterated that they would have liked more training for what they would face and for how their teachers would cope with the multiple and on-going demands placed on them.  Principal B stated, "It's certainly changed the basic job description that principals have." Principal A found that a distributed leadership model allowed her to focus on high level organisation while other staff supported the physical safety and emotional security of students and parents. Principal D felt her response was guided by "a culture of care". How might we capture successful experiences and enable other crisis leaders to learn from them?

While the Ministry of Education has a detailed set of guidelines and resources for emergency management, the principal in Tarrant's study, stated, "I literally didn't have time to find the right policy . . . ." (2011a, p. 73). Policies, guidelines and resources are useful for forward planning and envisioning scenarios but as the crisis leaders and school principals in this article have shown, in reality, it falls back onto something less tangible than "processes and guidelines and paper" (Tarrant, 2011a, p. 73). While some of the factors relating to successful crisis leaders revolve around their personal qualities (see Mutch, 2015b), some of the success is in embedding an organisational culture that can rise to the occasion when needed.

It could be argued that an organisation with a shared vision, embedded values, inclusive culture, distributed leadership and engaged members, in which creative problem solving, mutual support and personal autonomy can thrive is not only a good idea for its own sake but will have further pay-off when faced with a crisis or disaster situation. A recommendation from this study, therefore, is to capture these valuable experiences in practical ways that can promote effective leadership development, irrespective of the possibility of crises or disasters. This training needs to be delivered by facilitators with credible experience, who can lead each organisation to create a culture, structure and way of operating that aligns with their vision, purpose, values and context. Each part of the leadership structure – the leader, the

leadership team and the wider organisation needs a more detailed focus on the roles they will play in ordinary times and might also be called upon to play in extraordinary times. Their emergency management planning and crisis leadership preparation will be a natural extension of the organisational culture they build and will provide them with the strength and the will to face the unimaginable. In this way, the stories of these "quiet heroes" will not only be given due acknowledgement but will have wider benefit for schools, their communities and beyond.

**Acknowlegement**

**References**

Akbaba-Altun, S. (2005). Turkish school principals' earthquake experiences and reactions. *International Journal of Educational Management, 19*(4), 307-317. http://dx.doi.org/10.1108/09513540510599635

Athukorala, P. (2012). *Disaster, Generosity and Recovery: Indian Ocean Tsunami. Working paper 2012/04.* Canberra: Australian National University.

Aydan, O., Ulusay, E., Hamada, M., & Beetham, D. (2012). Geotechnical aspects of the 2010 Darfield and 2011 Christchurch earthquakes, New Zealand, and geotechnical damage to structures and lifelines. *Bulletin of Engineering Geology and the Environment* 71, 637–662. DOI 10.1007/s10064-012-0435-6

Bangay, C. (2013). Natural hazards in India: Forewarned is forearmed. In D. Smawfield (Ed.), *Education and natural disasters. Education as a humanitarian response* (pp. 62-85). London: Bloomsbury.

Biquet, J. (2013). Haiti: Between Emergency and Reconstruction: An inadequate response. *International Development Policy/Revue internationale de politique de développement* 4 (3) [Online]. DOI : 10.4000/poldev.1600

Boin, A., 't Hart, P., McConnell, W., & Preston, T. (2010). Leadership style, crisis response and blame management: The case of Hurricane Katrina. *Public Administration, 88*(3), 706-723. http://dx.doi.org/10.1111/j.1467-9299.2010. 01836.x

Cahill, H., Beadle, S., Mitch, J., Coffey, J., & Crofts, J. (2010). *Adolescents in emergencies.* Parkville, Vic., Australia: Youth Research Centre, The University of Melbourne.

Canterbury Earthquakes Royal Commission. (2012). *Final Report, Volumes 1-7.* Canterbury Earthquakes Royal Commission, Christchurch, New Zealand.

Cohen, S. (2011). *Haiti earthquake January 2010: What actions and policies can the Government of Haiti implement to improve emergency management response.* Unpublished Masters thesis. San Jose State University.

Education Review Office. (2013). *Stories of resilience and innovation in schools and early childhood services.* Canterbury earthquakes: 2010-2012. Wellington, New Zealand: Education Review Office.

Ema, F. (2013). Earthquake, tsunami and nuclear disaster in Japan: The immediate aftermath. In D. Smawfield, (Ed.), *Education and natural disasters: Education as a humanitarian response* (pp.149-165). Bloomsbury: London.

Ferris, E., & Petz, D. (2012). *The year that shook the rich. A review of natural disasters in 2011.* The Brookings Institution, London School of Economics, London.

Ferris, E., Petz, D., & Stark, C. (2013). *The year of recurring disasters.  A review of natural disasters in 2012.* The Brookings Institution, London School of Economics, London.

Fillmore, E., Ramirez, M., Roth, L., Roberston, M., Atchison, C., & Peek-Asa, C. (2011). After the waters receded: A qualitative study of university official's disaster experiences during the Great Iowa Flood of 2008. *Journal of Community Health, 36,* 307-315.

Greenberg, J.W. (2002). September 11, 2001. A CEO's story. *Havard Business Review, 80*(10), 58-64.

Japan Society. (2011). Matsuiwa Junior High School. Retrieved from: http:// aboutjapan.japansociety.org/content.cfm/matsuiwa_junior_high_school

Kielkowski, R. (2013). Leadersship during crisis. *Journal of Leadership Studies 7*(3) 62-65. DOI:10.1002/jls.21300

Lazarus, P., Jimerson, S., & Brock, S. (2003). *Response to natural disasters: Helping children and families cope. Information for school crisis teams*. National Association of School Psychologists, Bethesda, MD.

Margesson, R., & Taft-Morales, M. (2010). Haiti Earthquake: Crisis and Response. Congressional Research Service. http://www.crs.gov

McCaughey, B.G., Hoffman, K.J., & Llewelyn, C.H. (1995). The human experience of earthquake. In R. J. Ursano, B. C. McCaughey, and C.C. Fullerton, (Eds.), *Individual and community responses to trauma: the structure of human chaos* (pp. 136-53). London: Cambridge University Press.

Ministry of Education. (2010a). *Managing emergencies and traumatic incidents – The guide.* Wellington: Ministry of Education, Special Education Professional Practice Unit.

Ministry of Education. (2010b). *Managing emergencies and traumatic incidents – The resources.* Wellington: Ministry of Education, Special Education Professional Practice Unit.

Ministry of Education, Culture, Sports, Science & Technology [MEXT]. (2012). Response to the Great East Japan Earthquake. Retrieved from: http://www.mext.go.jp/b_menu/hakusho/html/hpab201001/detail/1326826.htm

Mutch, C. (2013). "Sailing through a river of emotions": Capturing children's earthquake stories. *Disaster Prevention and Management, 22*(5), 445-455.

Mutch, C. (2014). The role of schools in disaster preparation, response and recovery: Lessons from the literature. *Pastoral Care in Education, 32*(1), 5-22.

Mutch, C. (2015a). "Quiet heroes": Teachers and the Canterbury earthquakes. *Australasian Journal of Disaster and Trauma Studies, 19*(2), 77-86.

Mutch, C. (2015b). Leadership in times of crisis: Dispositional, relational and contextual factors influencing school principals' actions. *International Journal of Disaster Risk Reduction*. http://dx.doi.org/10.1016/j.ijdrr.2015. 06.005

Mutch, C., Yates, S., & Hu, C. (2015). Gently, gently: Undertaking participatory research with schools post-disaster. *Gateways: International Journal of Community Research and Engagement, 8*(1), 79-99.

O'Connor, P., & Takahashi, N. (2013). From caring about to caring for: case studies of New Zealand and Japanese schools post disaster. *Pastoral Care in Education: An International Journal of Personal, Social and Emotional Development, 32*(1), 42-53. DOI:10.1080/02643944.2013.875584.

Ozmen, F. (2006). The level of preparedness of the schools for disasters from the aspect of school principals. *Disaster Prevention and Management, 15*(3), 383-395.

Parmenter, L. (2012). Community and citizenship in post-disaster Japan: The roles of schools and students. *Journal of Social Science Education, 11*(3), 6-21.

Peng, H. (2010). The grief process of a child survivor of the 921 Earthquake: A case report. *Australasian Journal of Disaster and Trauma Studies (2)*.

Porche, D. (2009). *Emergent leadership during a natural disaster. A narrative analysis of an acute health care organization's leadership*. Unpublished doctoral dissertation, Capella University, Minneapolis, MN.

Rego, L., & Garau, R. *Stepping into the void*. Geensboro, NC: Centre for Creative Leadership.

Rinella, S. (2007). *The presidential role in disaster planning and response: Lessons from the front.* Ann Arbor, MI: Society for College and University Planning.

Ryan, C., & Tsu, S. (2011). Why do visitors go to museums? The case of 921 Earthquake Museum, Wufong, Taichung. *Journal of Tourism Research 16*(2), 209-228.  DOI: 10.1080/10941665.2011.556342

Sachetta, K. (2014). Rebuilding a school community. *Principal Leadership, 14*(3), 37.

Seyle, D. C, Widyatmoko, C. S., & Silver, R.C. (2013). Coping with natural disasters in Yogyakarta, Indonesia: A study of elementary school teachers. *School Psychology International 34* (4) 387-404 DOI: 10.1177/0143034312446889

Tarrant, R. (2011a). Leadership through a school tragedy: A case study. (Part 1 – The first week). *Australasian Journal of Disaster and Trauma Studies,* (3), 65-76.

Tarrant, R. (2011b). Leadership through a school tragedy: A case study. (Part 2 – The next two years). *Australasian Journal of Disaster and Trauma Studies,* (3), 77-87.

United States Geological Survey (2012). *Largest and deadliest earthquake by year, 1990–2011.* http://earthquakeusgs.gov/earthquakes/eqarchives/year/ byyear.php

Zhong, Z. (2013). Earthquake in China: A Sichuan case study. In D. Smawfield (Ed.), *Education and natural disasters. Education as a humanitarian response* (pp. 127-148). London: Bloomsbury.

Zhuravsky, L. (2013). *Crisis leadership in an acute clinical setting: Christchurch Hospital ICU 2011.* Unpublished Masters dissertation. University of Otago, Dunedin, New Zealand.

**Author**

**Carol Mutch** is currently Head of School and Associate Professor in the School of Critical Studies in Education at the Faculty of Education, University of Auckland, New Zealand.  She researches, teaches and writes on educational policy, curriculum development, research and evaluation methods, and most recently, due to the devastating earthquakes in her home city of Christchurch, the role of schools in disaster response and recovery. She is author of several books on educational research and numerous book chapters and journal articles on her research topics. She has received awards for her teaching, research and academic service.

Email:  c.mutch@auckland.ac.nz