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The place of education in building disaster resilience: a strategic examination

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Disaster education is becoming increasingly popular as a means of ensuring public safety, knowing that governments and infrastructure cannot protect all individuals and their communities in all emergencies. With the commitment by governments over the past decade to building disaster resilience, there is also a growing desire for community education to support this relatively new goal. This paper examines what is required to refine existing disaster education plans and programs to effectively help build community disaster resilience.
The place of education in building disaster resilience

Disaster education is becoming increasingly popular as a means of ensuring public safety, knowing that governments and infrastructure cannot protect all individuals and their communities in all emergencies. It is thought that people need to look after themselves and others during and after disasters, and thus need to be educated in how to do this.

There is a strong involvement by emergency agencies around the world to disaster education. However, most agencies only commit relatively small proportions of their budgets to it, especially compared to those for emergency operations.

With the commitment by governments over the past decade to building disaster resilience, there is also a growing requirement for supporting community education for this relatively new goal. It could be attractive to view existing disaster education as being synonymous with education to build disaster resilience. Further investigation is required to understand the relationship between the two types of education.

This paper offers a strategic and conceptual examination of the current and potential placement of disaster education in relation to building community disaster resilience. Based on this strategic placement, the paper then unpacks disaster education to provide added insight and identify opportunities for education planning and design.

Disaster education

Ironically, although there are a multitude of avenues for education implementation (or pedagogies) related to disasters, there is according to Preston (2012, p.1) ‘surprisingly little writing in the field of education/pedagogy itself’. This is largely due to disaster education being a ‘new area of enquiry in the field of education’ (Preston 2012, p.1) and because many of the disaster education programs are designed by non-educators from emergency agencies and other organisations. As a result, there is a large amount of disaster education activity around the world with little technical research into its educational veracity.

Furthermore, with technological developments such as social media, all people have the opportunity to be involved in disaster education. There is therefore a pressing need to examine disaster education in this context and provide robust education-based guidance to people using these emerging technologies for disaster education.

Preston (2012, p.1) notes that ‘the disciplinary boundaries of disaster education are fluid and the literature on the topic can be found within the sociology of disasters, public health and health promotion, humanitarian response, political communication and public relations’. Although more specific education-based research is required as argued above, it is useful that disaster education continues to draw upon and combine with other disciplines. Of particular importance is the nexus between the
academic fields of education, psychology and sociology in understanding people’s reactions to disasters (see Figure 1). In the disaster context education provides an understanding of how people learn; psychology how people behave; and, sociology how people connect (Dufty, 2013, p.3).

![Figure 1: The main academic fields that inform an understanding of people’s reactions to disasters](image)

There are several definitions of disaster education that may lead to confusion about its place in emergency management, and more broadly related to community disaster resilience. For example, Shaw, Shiwaku and Takeuchi (2011, p.7) believe that ‘disaster education’, ‘disaster risk education’ and ‘disaster prevention education’ are ‘different expressions that essentially mean disaster risk reduction education’. Preston (2012, p.3) views disaster education more along the lines of helping citizens ‘prepare for various disasters, consider what they would do in a disaster and think about how they would respond’.

Moreover, there is a tendency of emergency agencies to divide disaster education into at least ‘education’, ‘communications’ and ‘engagement’. There can be separate sections of an emergency management agency that are responsible for each (or some) of these activities. This division is used by emergency agencies as there are some differences between each in emergency management practice.

‘Engagement’ involves processes that inform, consult, involve, partner with and empower communities (International Association for Public Participation, 2004). As used by emergency agencies, it includes activities such as events, community meetings, webinars, ‘meet-the-street’ discussions and doorknocks.

‘Communications’ involve the exchange of information relating to risk and emergencies (Covello, 1992), including for warnings. Communications can include
use of media releases, websites, newsletters, text messages and apps (particularly for warnings).

‘Education’, in its narrow sense as used by some emergency agencies, involves planned activities that lead to prescribed learning outcomes (Dufty, 2011, p.36). In this sense, it can include agency staff and community volunteer training, community preparedness and emergency courses, school lessons, university courses and business continuity programs.

It should be noted that social media can be used for all three activities (Dufty, 2012a, p.42).

What is common between education, communications and engagement (ECE) is that they all contribute to disaster-related learning (see Figure 2).

![Figure 2: Disaster education, communications and engagement all lead to disaster-related learning](image)

Although ECE is used by many emergency agencies in practice, the holistic term ‘disaster education’ is appropriate in strategic discussion as it is synonymous with ‘disaster learning’. This assertion is supported by an examination of the roots of the word ‘education’.

Craft (1984) noted that there are two different Latin roots of the English word ‘education’. They are *educare*, which means to train or to mold, and *educere*,
meaning to lead out. While the two meanings are quite different, they are both represented in the word ‘education’. They relate to different types of learning possible across education: one calls for rote memorisation and appropriate response; the other requires questioning, thinking, and creating.

Thus disaster education will be addressed in this article in its broadest sense (i.e. synonymous with ‘disaster learning’) encompassing disaster-related ECE. However, it must be acknowledged that disaster education is not the only means of disaster-related learning; learning for individuals, organisations and communities can also be obtained from means such as evaluation and crisis mapping.

**Community disaster resilience**

As noted above, emergency agencies carry out disaster education primarily to ensure public safety (and protect property if possible) which is paramount in their charters. What is required to place their existing disaster education in terms of building community disaster resilience?

The concept of resilience has been in the disaster management literature since the 1980s (Wildavsky, 1988) but has come into vogue as an overriding goal in the past ten years. There are a multitude of definitions of ‘disaster resilience’. The original notion of resilience, from the Latin word *resilio*, means to ‘jump back’ or ‘bounce back’. According to de Bruijne, Boin and van Eeten (2010, p. 13), ‘In the past decades, research on resilience has been conducted at various levels of analysis – the individual level, the group level, and the organizational or community level – in a wide variety of disciplines including psychology, ecology, organization and management sciences, group/team literature and safety management’.

Several researchers (e.g. Longstaff, 2005) have made an interdisciplinary effort to further refine the concept of resilience in relation to disaster management. However, a dilemma for researchers and planners has been whether disaster resilience should involve the ability of a community to ‘bounce back’ (i.e. resume its normal functioning) as per the original notion, or to ‘bounce forward’ after a disaster (Manyena et al, 2011). Some researchers such as Paton (2006) opt for the latter notion arguing that the ‘bounce back’ idea neither captures the changed reality after a disaster, nor encapsulates the new possibilities wrought by a disaster.

Although the academic debate continues on what precisely is disaster resilience, many governments around the world have developed strategic policies and plans that aim to guide countries toward achieving it. For example, the Hyogo Framework for Action was an outcome of the 2005 World Conference on Disaster Reduction held in Kobe, Japan. One of its five specific priorities for action is ‘building a culture of safety and resilience’.

Most of these strategic plans and policies include some reference to three requisites for community disaster resilience:

1. Disaster risk reduction
2. Emergency management
3. Economic support

It should be acknowledged that there are other factors that lead to building community disaster resilience (e.g. infrastructure, governance, leadership). However, the above three factors appear to be the most critical in terms of the affected communities. This relationship is supported by the Australian National Climate Change Adaptation Research Plan for Emergency Management (Pearce et al, 2009, p. 4) which states that ‘When natural disasters occur, the consequences of damage and loss are a function of the effectiveness of the disaster mitigation strategies that have been implemented, the activities of the emergency services, and the resilience of the communities and economic sectors affected.’

**Education as part of disaster resilience**

A key concept in the community disaster resilience relationship outlined above is that of ‘shared responsibility’. The Victorian Bushfires Royal Commission in its Final Report (2010, p. 352) uses the expression shared responsibility ‘to mean increased responsibility for all. It recommends that state agencies and municipal councils adopt increased or improved protective, emergency management and advisory roles. In turn, communities, individuals and households need to take greater responsibility for their own safety and to act on advice and other cues given to them before and on the day of a bushfire.’

Although there is a currently a large amount of education activity within disaster risk reduction, emergency management and economic support (e.g. insurance education), the concept of ‘shared responsibility’ helps to provide an insight into the strategic fit of this triumvirate with communities. It alludes to education operating between the three resilience elements and individuals/communities that are sharing responsibility and concomitant learning.

This possible placement of disaster education in relation to the resilience triumvirate can be explained through the Venn diagrams in Figures 3, 4 and 5. The diagrams show the relationships across the Prevention, Preparedness, Response and Recovery (PPRR) model commonly used in emergency management.

Before a disaster, two of the three parts of the triumvirate – disaster risk reduction and emergency management – interrelate and with individuals and their communities (see Figure 3).

One could argue the value of the ‘disaster risk reduction’ and ‘emergency management’ division shown in Figure 3 when Prevention and Preparedness from PPRR in emergency management could encapsulate both. One reason for this is that it distinguishes hazard risk mitigation (Prevention) activities from Preparedness activities, the boundaries of which are which are sometimes confused. According to Topping (2011, p. 15), ‘Mitigation is distinguished from preparedness by its emphasis on creating long-term resilience through permanent modification of physical and
other circumstances which create risk and vulnerability. Yet mitigation is widely misunderstood, often confused with preparedness - and not just by news media and the general public.’

The distinction between disaster risk reduction and emergency management is demonstrated practically in several parts of the world through the demarcation of responsibility and activity. For example, in New South Wales (NSW), Australia, floodplain risk management is primarily the responsibility of local councils, with the NSW State Emergency Service responsible for flood preparedness and response.

In Figure 3 (before a disaster), disaster education is located at the intersections between both disaster risk reduction and emergency management and the affected individuals and communities. Although disaster education is a learning conduit between the agencies responsible for disaster risk reduction and emergency management and affected individuals/communities, in the spirit of ‘shared responsibility’ this education should involve all parties e.g. individuals/communities assisting in their own resilience learning and in that of the agencies (i.e. not only a ‘top-down’ agency education approach).

![Diagram](image)

*Figure 3: The place of disaster education before a disaster*

Prior to a disaster, the aim of disaster risk reduction is to reduce the risk to people and property. During and immediately after a disaster (the Response stage in the PPRR model), emergency management works with individuals and communities within the protection of the ‘residual risk’ provided by disaster risk reduction. This relationship is shown in Figure 4, still with disaster education providing learning for emergency agencies, individuals and communities.

For those hazards that are sudden (e.g. earthquakes, terrorist attacks), the disaster education (learning) may largely be derived from communications immediately after
the event. On the other hand, there is opportunity for all parts of ECE to be used if there is a long warning time and/or duration of the event (e.g. riverine floods, ‘campaign’ bushfires/wildfires).

Figure 4: The place of disaster education during the disaster response

As shown in Figure 5, after a disaster individuals rely largely on economic support (e.g. insurance, humanitarian aid), ongoing assistance from emergency organisations and from others in their communities. Learning in this relationship helps in the Recovery phase that returns individuals and communities to normal functioning (a key measure of resilience).

Figure 5: The place of disaster education in the recovery after a disaster
Implications

There are several implications of the above strategic examination for disaster education planning and design.

Firstly, this paper shows that for strategic planning and academic research it is easier to envisage disaster education as disaster learning as it places the focus on the learner (and his/her needs), rather than the provider (Dufty 2012b). This helps resolve the potential confusion between using the components of ECE or the holistic meaning of disaster education (and the issue of clear definition of each). Furthermore, in line with the definition promoted by Webber and Dufty (2008, p.1) for flood education, a more inclusive and currently relevant definition of disaster education is ‘any learning process or activity that helps build community resilience to disasters’.

Secondly, if disaster education (or ECE) provided by emergency agencies is to help build disaster resilience through learning then it needs to not only be geared to public safety and reducing risks to property, but also to attaining an efficient recovery to ‘bounce back’ through the post-disaster relationships as illustrated in Figure 5. In addition, as mentioned above, learning can also occur from evaluation. To help with a ‘bounce forward’ approach to building disaster resilience, learning should be also obtained by post-disaster evaluation conducted not only by agencies (e.g. after action reviews) but also with impacted communities (e.g. community de-brief meetings, resilience forums, webinars). This post-disaster improvement learning should also be part of disaster education using the above new definition. A summary of the learning outcomes for disaster resilience is provided in Figure 6.

![Figure 6: The learning outcomes of disaster education in relation to disaster resilience](image)
Thirdly, as shown in Figures 3, 4 and 5, disaster education needs to be part of disaster risk reduction, emergency management and economic support plans as it is part of the bridge to people and their communities. In the spirit of shared responsibility, communities should participate in the development, implementation and evaluation of these plans.

Fourthly, Figures 3-6 inclusive help to identify segments of content for disaster education design related to building community disaster resilience. These content segments relate to the possible learning outcomes in Figure 6 and are shown in Figure 7.

For weather-related hazards (e.g. flood, heatwave, drought, wildfire/bushfire), learning related to climate change adaptation should also be added, as it will impact on the other content segments. An example of a program that coupled climate change adaptation learning with some of the other segments shown in Figure 7 is described by Stevens et al (2012).

**Figure 7: Segments of learning for community disaster resilience**

In relation to Figure 7, although there is a cyclical nature to the learning segments, it should not be necessarily assumed that one segment is the precursor for the next. In other words, all should be planned for prior to a disaster. However, climate change adaptation learning, disaster risk learning and disaster preparedness learning should be implemented before an event (refer to Figure 3), disaster response learning during and immediately after an event (refer to Figure 4), and disaster recovery learning and post-disaster learning after an event (refer to Figure 5).
Fifthly, this examination of the place of disaster education enables specific content to be scoped for each potentially impacted community that will help build disaster resilience. This can be achieved by unpacking the learning content segments from Figure 7. For example, the disaster preparedness learning segment in Figure 7 could be unpacked to provide the content shown in Figure 8.

**Figure 8: Possible unpacking of disaster preparedness learning from Figure 7**

The ‘precautions’ learning segment in Figure 8 could be further unpacked as shown in Figure 9. The same unpacking process can then be conducted for the other learning content segments in Figure 7.

**Figure 9: Possible unpacking of the precautions part of preparedness learning from Figure 8**
This process of unpacking each of the learning segments in Figure 7 will provide clarity to what should be included in a disaster education plan or program if it is to effectively help build disaster resilience. It should be stressed that this unpacking (or content scoping) should be done by community members in liaison with the appropriate agencies and other organisations, as part of shared responsibility.

Lastly, the above examination suggests the need for a refined approach to existing disaster education (ECE), including greater emphasis on learning (rather than provision) and a clearer understanding of the timing and content of disaster learning that will help build disaster resilience. It will also help to further develop the Learning for Disaster Resilience (LfDR) approach outlined by Dufty (2012b), a practical example of which is the design by Molino Stewart (2012) of a flood education plan for Fairfield City Council in Sydney, Australia.

Conclusion

The examination of the place of disaster education identified issues relating to the definitions of disaster education. Some view it holistically; others, including most emergency agencies, segment disaster learning into education, communications and engagement. This paper suggested that the emphasis should be more on the learner, rather than how it is provided. It offered a definition of disaster education aligned to this learning emphasis, and to building community disaster resilience.

The paper developed a strategic framework to build community disaster resilience and located disaster education within the framework for before, during and after a disaster. Using this strategic placement it identified appropriate content that could be used in disaster resilience-related education plans and programs. This guidance will enable communities and emergency agencies to refine existing plans and programs in terms of building community resilience.

The strategic placement of disaster education should be acknowledged by governments and communities and actioned within the milieu of disaster resilience-building mechanisms. Further research is required to identify pedagogies relevant to the content and learning outcomes identified in this paper. Also, the content identified needs to be tailored to specific hazards and communities, and evaluated within that design.

References


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