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**Evaluating Disaster Education  
Programs for Children**

A thesis presented for the degree of

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## Abstract

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This research aimed to generate new theories on how to evaluate the outcomes and societal impacts of disaster education programs for children. In the last decade, disaster education programs for children have been promoted as an innovative approach to disaster risk reduction, based on several theories about the benefits of these programs. Due to limited research on these programs, widely held assumptions about the relationships between program outcomes and societal improvements in disaster risk reduction remain unchallenged.

The thesis uses case studies of evaluations to explore ways to improve the evaluation of disaster education programs for children. To build on previous research, this study began with a methodological review of program evaluations in order to characterize the tradition of evaluation methods. Based on the finding that few evaluations examined program theories, program theory models were developed for two case study evaluations of disaster education programs for children.

The first case used quasi-experimental methodology to underpin an impact evaluation of ShakeOut, an earthquake and tsunami drill in two Washington State school districts. The program logic suggested that drills provided children with adequate understanding of protective actions to prevent injuries and deaths during a disaster. The second case used process evaluation to explore the implementation of *What's the Plan, Stan?*, a free, voluntary disaster teaching resource distributed to New Zealand primary

schools. The process logic suggested that increased promotion of the resource would increase its uptake and use.

The case studies revealed that some program theories common to many disaster education programs for children are faulty. The findings of the ShakeOut evaluation suggest school drills, as they are currently practiced, do not teach all children adaptive response skills. The *What's the Plan, Stan?* evaluation identified several intervening and deterrent factors influencing the resource's uptake and use, suggesting increased national promotion of the resource is unlikely to increase its use. In both case studies, the application of theory-based evaluation methods helped to articulate unknown influencing factors and develop meaningful and feasible outcome indicators for both quantitative and qualitative research methods. Ongoing research is needed to refine outcome indicators of programs' societal impacts.

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## **Operational definitions**

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The definitions below describe the key concepts underpinning this research.

### *Disaster*

Disaster is a natural or human-caused hazard that is “a serious disruption of the functioning of a community or a society involving widespread human, material, economic, or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources” (United Nations International Strategy for Disaster Reduction Terminology, 2007a). Disasters include destructive hazards such as earthquakes, tsunamis, storms, blizzards, tornados, wildfires, floods, pandemics, nuclear emergencies, chemical spills, and terrorism, among others.

### *Disaster risk*

Disaster risk is the potential for negative impacts from disasters including loss of life, injuries and damage to assets, functions, and services (UNISDR Terminology, 2009).

### *Disaster risk reduction*

Disaster risk reduction is instrumental action “to minimize vulnerabilities and disaster risks throughout a society in order to avoid (prevent) or to limit (mitigate and prepare for) the adverse impacts of natural hazards, and facilitate sustainable development” (United Nations Children’s Fund, 2012, p. 3).

### *Disaster preparedness*

A definition of disaster preparedness is adapted from the UNISDR's definition of preparedness, namely "the knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions" (UNISDR Terminology, 2007b). In the field of emergency management, preparedness is one of four functional phases of the conceptual disaster management cycle that includes preparedness, response, recovery, and mitigation (Mushkatel & Weschler, 1985).

### *Public education*

Public education is the emergency management practice of training and educating members of the public (Peek & Mileti, 2002). The New Zealand Ministry of Civil Defence & Emergency Management (2007, p. 7) describes public education as actions that "build public awareness and understanding by individuals and communities of hazards....that ultimately will lead to action towards preparedness." Public education is distinct from the emergency management concept of *public information*, which is defined by the U.S. Federal Emergency Management Agency (2013c, para. 1) as the "processes, procedures and systems to communicate timely, accurate and accessible information on the incident's cause, size and current situation to the public, responders and additional stakeholders (both directly affected and indirectly affected)."

### *Disaster education*

For the purpose of this research, “disaster education,” also referred to by some scholars as “hazards education,” is used as short hand for a public or curricular education initiative that includes the theory and practice of teaching two incorporated subjects: 1) disaster and hazard risks and 2) disaster risk reduction, preparedness, and/or protective actions. In practice, it is common for programs described as disaster or hazards education to teach only the causes of disasters; however, these programs do not meet the definition of disaster education for the purpose of this research.

### *Evaluation*

Evaluation is “an applied inquiry process for collecting and synthesizing evidence that culminates in conclusions about the state of affairs, value, merit, worth, significance, or quality of a program, product, person, policy or plan” (Fournier, 2005, p. 139). In *program evaluation*, the object of evaluation is a program, described as an arrangement for providing a service or conducting professional action (Kushner, 2005, p. 334). Program evaluation has two purposes: 1) assessing the outcomes and impacts of a program and 2) examining the process of the program and its implementation.

### *Outcome indicators*

In the practice of evaluation, outcomes are benefits or changes among individuals or populations during or after participating in program activities and outcome indicators are defined as “specific, observable and measurable characteristics or change that will represent achievement of the outcome” (United Way of America, 1996, p. xv).

### *Effectiveness*

Effectiveness is “the degree to which something is successful in producing a desired result” (“Effectiveness,” 2014). Measurement of the outcomes and impacts of a program can contribute to the understanding of the program’s worth or success. However, the indicators and concepts used to evaluate the effectiveness of any one program can vary widely depending on the evaluation design and the intended audience. Also, in practice, evaluations of program effectiveness do not always capture the detrimental outcomes of programs; therefore, a measurement of positive outcomes alone may not be an adequate measure of the overall merit or worth of a program (Davidson, 2005, p. 122).

### *Program implementation*

Program implementation is defined as “a specified set of activities designed to put into practice an activity or program of known dimensions” (National Implementation Research Network, n.d.). Program implementation deals with *program integrity*, which includes five main dimensions: adherence, dosage, quality of delivery, participant responsiveness, and program differentiation (Dane & Schneider, 1998). The evaluation of program implementation provides insights into how the program is being conducted and how it can be improved (Rossi, Lipsey, & Freeman, 2004).