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# ABSTRACT

The present study investigated hazard education and preparedness in relation to socio-economic status (SES) in 22 Wellington schools; SES was determined by the decile rankings of the schools comprising the study. Schools in the lower deciles of the present study generally reported lower levels of hazard education and preparedness than schools in the upper deciles. Although the sample size was small, trends were consistent with previous studies of hazard preparedness in schools where there is growing evidence that children and their families from lower SES areas are: (1) not as well prepared to cope with disasters as children and their families from higher SES areas; and that (2) children from lower SES families do not achieve the same levels of educational achievement as children from higher SES families. Thus, greater efforts and resources are required for hazard preparedness for children from lower SES families. Ensuring that schools in lower SES communities are supported in their hazard preparedness efforts can have positive repercussions for families and the wider community by enhancing their ability to respond effectively to hazard events. As well as extra support for schools in low SES areas, there is a need for a comprehensive investigation of hazard education and preparedness in schools to identify the nature of current hazard education programmes. Alongside this, there is a need for a systematic evaluation of learning outcomes to assess the efficacy of current programmes in relation to children's preparedness levels.

# KEYWORDS

## 1.0    INTRODUCTION

The Wellington region has a complex hazardscape, making it susceptible to the full spectrum of natural and anthropogenic hazards from earthquakes, tsunami, and intense storms, through to fire, pandemics, and power failures (Coomer, Johnston, Edmonson, Monks, Pedersen, & Rodger, 2007), thus posing a potential daily threat to individuals, communities, and infrastructure within the region.

Children are seen as particularly vulnerable to the impacts of hazard events. They have often had only limited exposure to hazards (i.e., minor earthquakes) and are often reliant on adults to protect them. It is, therefore, necessary to ensure that children are well equipped to cope during and after an emergency, with knowledge of the particular risks of the hazard and an understanding of how to respond in such an event.  Much of this knowledge and preparedness can be gained from hazard education programmes provided at school.  As children's learning at school is shared with their families, a flow-on effect is created to increase community preparedness, resilience, response, and recovery (Coomer et al., 2007; Finnis, Standring, Johnston, & Ronan, 2004; Ronan & Johnston, 2005).

Schools have a responsibility to keep children safe in emergency events, including emergencies caused by natural hazards.  The Ministry of Education (2008) requires every New Zealand school to have a documented Health and Safety Policy that reflects compliance with relevant legislation such as the Health and Safety in Employment Act 1992, the Fire Service Act 1975 No 42, and the Building Act 2004 No. 72, and their amendments.  Annual safety drills such as fire drills and emergency evacuations are a legal requirement, the Ministry of Education stating they be carried out "in accordance with the school's evacuation scheme" (Ministry of Education, 2008).  Hazard preparedness in schools requires that staff, children, and their families are familiar with plans and procedures the school has in place for emergency events, and that school emergency plans and procedures, including emergency response drills and evacuations, are evaluated and updated regularly.

For children to be appropriately prepared to cope with hazards, schools require hazard education programmes to be delivered to children on a regular basis.  The Ministry of Civil Defence and Emergency Management (2009) has provided New Zealand schools with an emergency preparedness resource in the form of "What's the plan Stan" (WTPS).  While WTPS predominantly comprises lesson plans and teaching resources, it also offers guidelines for conducting emergency response exercises and evacuation drills.

Prior research (Tarrant & Johnston, 2010) suggests that children from schools in lower socio-economic communities may have particular needs that are not being met in terms of the children's knowledge and preparedness to cope in a disaster. School achievement (which includes hazard preparedness) can also vary according to socio-economic status (SES).  For example, differences in achievement at school, according to SES, were demonstrated in a longitudinal study of 3072 (2658 on some variables) British school children (Hango, 2007). McLoyd (1998) supports Hango's findings, asserting that part of the difference between SES groups for school achievement can be attributed to the degree of caregiver involvement in children's' schooling, as well as levels of cognitive stimulation at home.  Hango also found that in socioeconomically disadvantaged homes, parental involvement in their children's school-learning was particularly important. Thus, it is essential that schools encourage

parental involvement in children's learning by urging children to discuss their learning about hazards with caregivers at home. Such activity is likely to reinforce what the children have learnt at school, as well as increasing the likelihood that learning from school will filter through to parents and the wider communities of low SES families who typically have fewer resources and lower levels of education.

In a New Zealand study, Marie, Fergusson, and Boden (2008) found that Maori children had significantly lower levels of educational achievement than non-Maori children. However, when controlled for socioeconomic factors, there was no statistically significant difference between Maori and non-Maori for educational outcomes. The generally lower socio-economic status of Maori, compared with other New Zealanders (according to the New Zealand census data cited in Howden-Chapman, Wilson, and Blakey, 1999) may be an important issue to consider in hazard preparedness, in accessing emergency management (EM) and community support, and in distribution of resources. In relation to hazard preparedness, it is important that schools develop relationships with local marae for mutual involvement, collaboration and support. Further, Hudson and Hughes (2007) point out that marae often provide community shelter during a disaster.

The relationship between SES and childrens' hazard education and preparedness is the focus of the present study.

## 2.0    BACKGROUND

In 2008, Coomer et al. conducted a survey of 102 school principals in the Wellington region of New Zealand to investigate hazard education and preparedness in schools. The present study continues the investigation by seeking to analyse data from the Coomer et al. study in relation to SES, SES being determined by the decile ranking of the schools that took part in the study. (See Section 2.1 for a description of how school decile rankings relate to the SES of families attending the schools.) To investigate SES, it was necessary to identify schools in the Coomer et al. data-set to establish school decile rankings. Of the 102 schools in Coomer et al., 22 could be identified for this study, and could thus be allocated their decile ranking. (In the Coomer et al. study, there was no need to identify the individual schools, so apart from 22, names of schools were not generally written on the survey forms.) Consequently, the present study is limited to these 22 schools. Anonymity of the schools in the present study is retained, and schools are identified only by their decile ranking.

### 2.1    Decile ranking

Each New Zealand school is allocated a decile ranking between 1 and 10, deciles being a reflection of the SES of families whose children attend the school. Decile one schools have the highest proportion of their students coming from low socio-economic backgrounds, while decile 10 schools have the lowest. Schools with lower decile rankings receive increased government funding to provide additional resources to support their students. Decile rankings for all New Zealand schools are available through the Ministry of Education, and are published on their website (see Ministry of Education, 2010).

## 3.0 OBJECTIVES

The objective of the present study was to investigate SES in relation to hazard education and preparedness in 22 Wellington schools. SES is determined by the decile rankings of the schools comprising the study.

It was expected that results of the present study would illuminate any differences in hazard preparedness according to decile ranking, and findings would assist schools and EM agencies in ensuring that schools from lower socio-economic communities not be disadvantaged in their efforts to prepare their students to cope with hazards and emergency situations.

## 4.0 METHOD

### 4.1 Participants

Twenty-two schools were selected for the present study, and were allocated their decile ranking as assigned by the Ministry of Education (see above).

The 22 schools varied in decile from 1-10 (see Table 1), though no decile 2 school was represented in the study. The schools in the sample include:
- 1 x composite school (Years 1-13)
- 5 x contributing schools (Years 1-6)
- 13 x full primary schools (Years 1-8)
- 1 x intermediate school (Years 7-8)
- 2 x special schools (Years 1-13)

Table 1     Decile rankings and frequency of schools in the sample

| Decile | Frequency |
|--------|-----------|
| 1 | 1 |
| 3 | 3 |
| 4 | 1 |
| 5 | 1 |
| 6 | 1 |
| 7 | 1 |
| 8 | 8 |
| 9 | 5 |
| 10 | 1 |
| Total | 22 |

### 4.2 Questionnaire and data

The completed questionnaire forms used in Coomer et al.'s survey (2008) provided data for analysis in the present study. The survey form comprised 23 questions, with some questions having several parts. For ease of reading the results, questions from the questionnaire are stated above each set of responses, rather than being provided in a separate appendix.

## 5.0 RESULTS

Results are mostly presented in tabular form. At times, respondents were asked to expand on an answer to a previous question, and in such cases responses are summarised under *Comments* directly following the related table.

Included in the *Decile* column of the following tables, the frequency of schools with the same decile ranking is shown in brackets: for example, 9 (5) denotes that for decile 9, there are 5 schools with that ranking.

It should be noted that for Question 1, the decile 1 school stated that EM was not part of their curriculum. Therefore, many of the questions that followed on the questionnaire did not apply to this particular school. For clarity of reporting however, the decile 1 school is recorded on all the response tables, with N/A entered alongside Decile 1 for questions that relate back to Question 1.

Table 2    Q1. Is EM education part of your curriculum?

| Decile | Yes | No |
|---|---|---|
| | Count | Count |
| 1 (1) | | 1 |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 7 | 1 |
| 9 (5) | 5 | |
| 10 (1) | 1 | |
| Total N=22 | 19 | 3 |

Table 3    Q2. If not, why not?

| Reason | Comment | Decile |
|---|---|---|
| Not relevant | Not relevant to our special type of school. | 1 |
| Not necessary | We have heeded the matters concerned. | 3 |
| Lack of time and resources | This will change later in the year. We plan a "disaster" exercise, followed by the WTPS resource. | 8 |

Q3. What would encourage you to incorporate hazard education into what you teach?

| Comments | Decile |
|---|---|
| • If schools identified it as something they wanted covered | 1 |
| • If part of health curriculum | 3 |
| • Not necessary | 8 |

Table 4    Q4. If EM is part of your curriculum, what aspects/hazards do your cover?

| Decile | Earthquake | Fire | Flood | Storm | Volcanic eruption | Pandemic | Tsunami | Power failure | Chemical spill | Gas leak | Landslip |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Count | Count | Count | Count | Count | Count | Count | Count | Count | Count | Count |
| 1 (1) | | | | Did not respond to this question | | | | | | | |
| 3 (3) | 3 | 3 | 3 | | 1 | 1 | | | | | |
| 4 (1) | 1 | 1 | | | | | 1 | | | | |
| 5 (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | |
| 6 (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 7 (1) | 1 | 1 | | | | | 1 | | | | |
| 8 (8) | 8 | 8 | 5 | 5 | 5 | 1 | 1 | | 1 | 1 | 1 |
| 9 (5) | 5 | 5 | 3 | 3 | 2 | 1 | 2 | 1 | | | 1 |
| 10 (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | |
| Totals /22 | 21 | 21 | 14 | 11 | 11 | 7 | 7 | 3 | 3 | 3 | 3 |

Table 5    Q5. Do you target the whole school, or particular year-levels?

| Decile | Whole school | Levels |
|---|---|---|
| | Count | Count |
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 7 | 1 |
| 9 (5) | 4 | 1 |
| 10 (1) | | 1 |
| Total N 21+1=22 | 17 | 4 |

| Levels targeted | Decile |
|---|---|
| • Years 1-8 | 3 |
| • Years 5-8 | 8 |
| • Year 6 up | 9 |
| • Years 5/6 | 10 |

Table 6     Q6. Do you update your emergency procedures/plans before running EM education programme?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 3 | 5 |
| 9 (5) | 5 | |
| 10 (1) | 1 | |
| Total N 21+1=22 | 15 | 6 |

Table 7     Q7. In what subjects do you incorporate EM education?

| Subject areas | Count | Decile |
|---|---|---|
| Health, Social studies | 5 | 3 |
| | | 8 |
| | | 8 |
| | | 9 |
| | | 9 |
| Health | 1 | 5 |
| Health, Physical education, Science | 1 | 3 |
| Health & safety | 1 | 9 |
| Health, Science, Technology, | 1 | 4 |
| Health, Social studies, Language | 1 | 8 |
| Health, Social studies, Science | 1 | 8 |
| Health, Social studies, Science, English | 1 | 10 |
| Health, Social studies, Science, Technology | 1 | 8 |
| Social studies | 1 | 8 |
| Social studies, English | 1 | 6 |
| Social studies, Maori education | 1 | 3 |
| Integrated curriculum studies | 1 | 9 |
| Language | 1 | 8 |
| Earthquake & fire | 1 | 7 |
| Stand alone subject | 1 | 8 |
| Total N = 20/22 | | |

One school did not incorporate EM education into various subjects:

Decile 9.  Decile1=N/A.

Table 8     Q8. Which resources do you use? (Tick all that apply.)

| Decile | WTPS | Internet | Library | Civil defence | Newspapers | Ministry of Education | Community groups | Local govt | Textbooks | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 (1) | | | | | Did not respond to this question | | | | | |
| 3 (3) | 3 | 3 | 2 | 1 | 2 | 2 | 1 | | | |
| 4 (1) | | 1 | 1 | | | | | | | |
| 5 (1) | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 | 1 |
| 6 (1) | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | 1 |
| 7 (1) | 1 | | | 1 | | 1 | | | | |
| 8 (8) | 6 | 8 | 8 | 6 | 7 | 4 | 5 | 3 | 1 | 1 |
| 9 (5) | 5 | 3 | 4 | 4 | 3 | 3 | 2 | 3 | | 1 |
| 10 (1) | 1 | 1 | 1 | 1 | 1 | | | 1 | 1 | |
| **Totals** | **18** | **18** | **18** | **15** | **15** | **12** | **9** | **8** | **4** | **4** |

Notes:   *WTPS: "What's The Plan Stan"* (A resource provided to schools by the Ministry of Civil Defence and Emergency Management.)
*Learning kits (Mana Education Centre)* are compiled by Mana Education Centre as chargeable learning resources directed at specific topics relevant to schools in New Zealand.

| **Other resources specified** | **Decile** |
|---|---|
| • St John's with staff | 5 |
| • Fire service | 6, 8 |
| • Learning kit (Mana Education Centre) | 9 |

Table 9 Q9. Do you use area-specific information? (E.g. information on local hazards and a list of useful preparedness measures that schools, youth, and families can undertake).

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 5 | 2 |
| 9 (5) | 4 | 1 |
| 10 (1) | 1 | |
| Total N 20+2=22 | 16 | 4 |

| Comments | Decile |
|---|---|
| • Unsure | 8 |
| • Yes, Kapiti Coast District Council Civil Defence radio. Liaise with local fire brigade | 9 |

Unstated: One decile 3 school; one decile 8. Decile 1=N/A

Table 10 Q10. Do you discuss emergency procedures with your students?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | 1 | |
| 3 (3) | 3 | |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 8 | |
| 9 (5) | 5 | |
| 10 (1) | 1 | |
| Total N=22 | 22 | |

Table 11 Q11. Do you encourage parent/caregiver participation in your education programmes?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | | 1 |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 3 | 4 |
| 9 (5) | 4 | 1 |
| 10 (1) | 1 | |
| Total N 20+2=22 | 13 | 7 |

| Comments | Decile |
|---|---|
| • Unsure | 8 |
| • Yes, Board of Trustees | 9 |

Unstated: One decile 8. Decile 1=N/A

Table 12    Q12. Are your EM programmes linked to other community initiatives?

| Decile | Yes Count | No Count |
|--------|-----------|----------|
| 1 (1) | N/A | |
| 3 (3) | | 3 |
| 4 (1) | | 1 |
| 5 (1) | | 1 |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 1 | 5 |
| 9 (5) | | 5 |
| 10 (1) | 1 | |
| Total N 19+3=22 | 4 | 15 |

Three schools did not respond to this question:

Two decile 8.  Decile 1=N/A.

Table 13    Q13. Do you provide follow up activities for the students?

| Decile | Yes Count | No Count |
|--------|-----------|----------|
| 1 (1) | N/A | |
| 3 (3) | 3 | |
| 4 (1) | 1 | |
| 5 (1) | | 1 |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 5 | 2 |
| 9 (5) | 4 | 1 |
| 10 (1) | 1 | |
| Total N 20+2=22 | 16 | 4 |

One school did not respond to this question:

One decile 8.  Decile 1=N/A

Table 14    Q14(a). Do you evaluate the effectiveness of your EM education programmes?

| Decile | Yes Count | No Count |
|--------|-----------|----------|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | | 1 |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 6 | 2 |
| 9 (5) | 4 | 1 |
| 10 (1) | | 1 |
| Total N 21+1=22 | 15 | 6 |

Table 15    Q14(b). If yes, how often?

| Frequency | Count | Decile |
|---|---|---|
| Each term (i.e., 4 times per year) | 4 | 7 8 8 9 |
| Annually | 4 | 3 3 6 9 |
| After each unit | 2 | 8 8 |
| As required | 1 | 8 |
| Twice per term (8 times per year) | 1 | 5 |
| Biannually | 1 | 9 |
| Every 2 years | 1 | 8 |
| Every 2+ years | 1 | 9 |
| Total N 15+7=22 | 15 | |

Six schools did not evaluate the effectiveness of their EM education programmes:

One decile 3; one decile 4; two decile 8; one decile 9; one decile 10.

Decile 1= N/A

Table 16    Q14(c). Do you evaluate the effectiveness of the information?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | N/A | |
| 3 (3) | 1 | 2 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 6 | 1 |
| 9 (5) | 3 | 2 |
| 10 (1) | | 1 |
| Total N 20+2=22 | 14 | 6 |

One of the fifteen schools that reported evaluating the effectiveness of their EM programmes did not respond to the question above:

Decile 8.

Table 17    Q14(d). If yes, how often?

| Frequency | Count | Decile |
|---|---|---|
| Each term (4 times per year) | 3 | 8<br>8<br>9 |
| Annually | 3 | 3<br>6<br>8 |
| After each unit | 1 | 8 |
| As required | 1 | 8 |
| Biannually | 1 | 9 |
| Every 2 years | 1 | 8 |
| Every 2+ years | 1 | 9 |
| Twice per term (8 times per year) | 1 | 5 |
| Total N  12+ 3 = 15 | | |

Three of the fifteen schools that reported evaluating the effectiveness of their EM programmes did not respond to the question above:

One decile 3; one decile 7; one decile 9.

Table 18    Q14(e). Do you evaluate whether the material needs updating?

| Decile | Yes<br>Count | No<br>Count |
|---|---|---|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 7 | 1 |
| 9 (5) | 4 | 1 |
| 10 (1) | 1 | |
| Total N<br>21+1 = 22 | 18 | 3 |

Table 19     Q14(f). If yes, how often?

| Frequency | Count | Decile |
|-----------|-------|--------|
| Annually | 4 | 3<br>6<br>8<br>10 |
| Each term (4 times per year) | 2 | 8<br>9 |
| After each unit | 2 | 8<br>8 |
| As required | 2 | 8<br>8 |
| Biannually | 1 | 9 |
| Every 2 years | 1 | 8 |
| Every 2+ years | 1 | 9 |
| Every 3 years | 1 | 3 |
| Twice per term (8 times per year) | 1 | 5 |
| Total N | 15+3=18 | |

Of the 18 schools that evaluated whether the material needs updating, three did not respond to the question above:

One decile 4; one decile 7; one decile 9.

Table 20     Q15 (a). Do you invite EM professionals into your school?

| Decile | Yes Count | No Count |
|--------|-----------|----------|
| 1 (1) | N/A | |
| 3 (3) | 3 | |
| 4 (1) | 1 | |
| 5 (1) | | 1 |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 6 | 1 |
| 9 (5) | 3 | 2 |
| 10 (1) | 1 | |
| Total N 20+2=22 | 16 | 4 |

Two schools did not respond to this question:

One decile 8.  Decile 1=N/A

Table 21    Q15 (b). If yes, how often?

| Frequency | Count | Decile |
|-----------|-------|--------|
| Annually | 3 | 6<br>7<br>8 |
| Every 2 years | 2 | 9<br>9 |
| Every 5 years | 1 | 3 |
| Once | 1 | 8 |
| As needed | 1 | 3 |
| When doing review | 1 | 8 |
| When necessary | 1 | 9 |
| When relevant | 1 | 10 |
| Total N | 11+5=16 | |

Of the 16 schools that reported inviting EM professionals into their school, 5 schools did not respond to the question above:

One decile 3; one decile 4; three decile 8.

Table 22    Q16. Have you ever sought information from EM?

| Decile | Yes<br>Count | No<br>Count |
|--------|------|------|
| 1 (1) | N/A | |
| 3 (3) | | 3 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 6 | 1 |
| 9 (5) | 1 | 3 |
| 10 (1) | 1 | |
| Total N<br>19+3=22 | 12 | 7 |

Three schools did not respond to this question: one decile 8; one decile 9. Decile 1=N/A

| Comments | Decile |
|----------|--------|
| • Updated regularly | 5 |
| • When relevant | 8 |
| • Unsure | 8 |
| • Annually | 8 |
| • Once, not regularly | 8 |
| • When necessary | |

Table 23    Q17. Do you feel the resources provided by EM are adequate?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | N/A | |
| 3 (3) | 1 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 7 | |
| 9 (5) | 4 | 1 |
| 10 (1) | 1 | |
| Total N 18+4=22 | 16 | 2 |

| Comments | Decile |
|---|---|
| • It would be better to have a list of all the resources available. | |
| • Unsure as to who Emergency Management refers to. | 3 |
| • WTPS has been very useful. When we liaised with Civil Defence personnel this was also useful - this doesn't happen at principal level now – shame. | 6 |
| • Need for more resources at the junior end of the school. | |
| • We do not look at "EM" but rather integrate aspects into a wide variety of units, e.g., the unit may be a language unit first with an aspect on fire/fire engines. | 8 |
| • I think so. We'll know more clearly once we begin using "WTPS" selectively. | |
| • Information not updated. | |
| • They have been extremely helpful. | 9 |
| • We had fabulous support [from EM] over last 3 years. | 10 |

Four schools did not respond to this question:

One decile 3; one decile 6; one decile 8.  Decile 1= N/A

Table 24    Q18 (a). Does your school undertake EM exercises?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | 1 | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 8 | |
| 9 (5) | 5 | |
| 10 (1) | 1 | |
| Total N=22 | 21 | 1 |

Table 25    Q18 (b). If yes, how often?

| Frequency | Count | Decile |
|---|---|---|
| Each term (4 times per year) | 12 | 3 |
|  |  | 3 |
|  |  | 4 |
|  |  | 6 |
|  |  | 8 |
|  |  | 8 |
|  |  | 8 |
|  |  | 8 |
|  |  | 8 |
|  |  | 9 |
|  |  | 9 |
|  |  | 9 |
| Biannually | 3 | 1 |
|  |  | 8 |
|  |  | 9 |
| 1-2 times per term | 1 | 9 |
| Annually | 1 | 10 |
| End of each term (plus evacuation each year or two) | 1 | 8 |
| Twice per term (8 times per year) | 1 | 5 |
| Total | 19 |  |

Two of the schools that reported their school undertakes EM exercises did not respond to the question above:

One decile 7; one decile 8.

Table 26    Q19. Have you discussed personal preparedness with staff?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 (1) | 1 |  |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 |  |
| 5 (1) | 1 |  |
| 6 (1) | 1 |  |
| 7 (1) | 1 |  |
| 8 (8) | 7 | 1 |
| 9 (5) | 5 |  |
| 10 (1) | 1 |  |
| Total N=22 | 20 | 2 |

Table 27    Q20. Are your staff aware that they may be asked to remain at school to supervise children who cannot be collected after a disaster event?

| Decile | Yes Count | No Count |
|:---:|:---:|:---:|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | 1 | |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 8 | |
| 9 (5) | 5 | |
| 10 (1) | 1 | |
| Total N 21+1=22 | 20 | 1 |

Table 28    Q21. Have you discussed with parents the arrangements made if they are unable to collect their children from school after a disaster event?

| Decile | Yes Count | No Count |
|:---:|:---:|:---:|
| 1 (1) | N/A | |
| 3 (3) | 2 | 1 |
| 4 (1) | | 1 |
| 5 (1) | 1 | |
| 6 (1) | 1 | |
| 7 (1) | 1 | |
| 8 (8) | 7 | 1 |
| 9 (5) | 5 | |
| 10 (1) | 1 | |
| Total N 21+1=22 | 18 | 3 |

Table 29    Q22. What measures are in place in your school to ensure contact details are regularly updated?

| Measure | Decile |
|---|---|
| • Every division does regular updates<br>• Daily on School Management System<br>• Requests for parents to update details go into newsletter. Updated list on school master - printed monthly | 3 |
| • Once a year | 4 |
| • Newsletter info, parents update regularly | 5 |
| • We update termly - send form out | 6 |
| • BOT chairman has a regular list of students, plus principal and secretary | 7 |
| • Records updated at the beginning of each year and before each emergency evacuation drill<br>• Yearly and more. Notice with current details sent out to be returned if correct, or updated and returned<br>• Phone / ring around<br>• Send out obviously identified forms. Regular reminders through weekly newsletter<br>• BOT election time and every term<br>• We ask for regular updates of contact addresses from parents<br>• Regularly update database - each year / on enrolment / as necessary<br>• We have electronic/paper lists provided by our School Management System | 8 |
| • Up-to-date student record cards. Up-to-date database on staff laptops<br>• Compiled each year and are updated during the year when necessary, each teacher has an emergency register as does the office<br>• Computer updated via sign off sheet sent home to parents annually<br>• Regular requests in newsletter<br>• Updated when a child is enrolled or transferred | 9 |
| • Each year prior to evacuation practice we update our lists | 10 |

Table 30    Q23. Does your school have food and water stored for staff and students after a disaster event?

| Decile | Yes Count | No Count |
|---|---|---|
| 1 | 1 | |
| 3 | 2 | 1 |
| 4 | 1 | |
| 5 | 1 | |
| 6 | | 1 |
| 7 | | 1 |
| 8 | 2 | 6 |
| 9 | 3 | 2 |
| 10 | 1 | |
| Total N=22 | 11 | 11 |

| Comments | Decile |
|---|---|
| In the process of redoing this, there will be by end of term | 8 |
| Memorandum of understanding with local supermarket | 8 |
| Water- yes, food – no | 6, 9 |
| The "disaster" exercise will enable us to establish roughly how many students cannot be collected from school. Then we will know what food/water requirements are necessary | 9 |

## 5.1 Key findings

Most schools (19/22) included hazard education programmes as part of their curriculum, usually as part of health or social studies programmes. The whole school generally received hazard education, rather than studies being targeted at only particular year-levels. The three schools that did not include hazard education in their curriculum included: a special needs school, decile 1; a Maori Immersion School, decile 3; and one decile 8 school. The decile 1 school believed that hazard education was not relevant to their type of school; the decile 3 school commented that they had "heeded" the matter (though they did not commit to including hazard education in the future); and the decile 8 school cited lack of time and resources as the reason hazard education had not been included in their curriculum to date. This school was the only one of eight decile 8 schools that did not include hazard education in the curriculum. This decile 8 school did indicate, however, that a disaster exercise was planned for later in the year, with material from WTPS (What's The Plan Stan) to be used in follow-up activities.

The most widely used hazard education resources were What's The Plan Stan (provided by The Ministry of Civil Defence and Emergency Management), the internet, and the library. Overall, the decile 1 to 4 schools used the smallest range of hazard education resources. Local government, textbooks, supplementary learning media, St Johns, and the fire service were used only by schools in the decile 5 to 10 range. Most of the schools in the decile 5 to 10 range also made use of civil defence resources, but of particular importance was that the decile 1 to 4 schools had limited or no contact with EM agencies or community groups.

Despite three schools reporting that they did not include hazard education in their curriculum (see Table 1), every school reported that they discussed emergency procedures with their students (some schools perhaps referring to safety requirements such as fire, or earthquake drills). Three of the four decile 3 and 4 schools, and ten of the 16 decile 9-10 schools reported encouraging caregiver participation in hazard education programmes. The decile 5 school did not encourage caregiver participation.

Sixteen of the schools reported providing follow up activities for students in their school-based education programmes, including all decile 3 and 4 schools. The extent and nature of follow-up activities are not known however. Only four schools linked their hazard education programmes to community initiatives, with no school below decile 6 doing so.

Fifteen schools evaluated the effectiveness of their hazard education programmes, with almost all of these (12/15) indicating that this evaluation was conducted at least once a year. Fourteen schools evaluated the effectiveness of the information, with nine of these doing this at least once a year. Eighteen schools evaluated whether the information needed updating, these schools reporting that they conducted evaluations at least once a year. Overall, slightly more than half (12/21) of the schools that include hazard education in their curriculum undertake all three evaluation and review tasks at least once a year. However, of the four decile 3 and 4 schools, only one school, decile 3, undertakes all three evaluation tasks. Another decile 3 school does not conduct any evaluation at all; nor does this school update their emergency plans and procedures before running hazard education programmes. The other decile 3 school does not evaluate the effectiveness of the information. The decile 4 school does not evaluate the effectiveness of their hazards education programme.

(It should be noted that because the decile 1 school did not include hazard education in their curriculum, this school did not respond to a considerable number of questions on the questionnaire, and little is known about their views of hazard education, apart from a perception that it was not relevant to their school.)

Nineteen of the 22 schools included hazards education in their school curriculum. Three did not: two of these were deciles 1 and 3 schools; the third school was decile 8. The decile 1 school indicated they would be encouraged to incorporate hazard education into their teaching "if schools identified it as something they wanted to cover" (see Question 3). The decile 3 school indicated they would be encouraged if hazards education were part of the health curriculum. The decile 8 school indicated hazards education was "not necessary" (see Question 3). Most schools, 16/22, used area-specific information in relation to hazard education in their schools.

In relation to keeping students prepared to cope with hazards, schools in the decile 5 to 10 range generally, regularly evaluated and updated their hazards education programmes. The most consistent gaps in updating and evaluation occurred in the decile 1 to 4 schools, or in one case (decile 1), the school did not conduct any hazard preparedness education at all.

Only one school, decile 3, reported having not undertaken hazards education exercises. The question relating to undertaking hazards education exercises (Q18(a), see Table 24), may have been somewhat unclear to respondents who may have understood the question to include only emergency drills such as "drop, cover, hold", or fire drills. Thus, for some schools at least, undertaking hazards education exercises may be limited to these two drills.

Eleven of the 22 schools in the sample had emergency food and water supplies stored at school for staff and students who would have to remain at school after a disaster event. A twelfth school had a memorandum of understanding with a supermarket nearby. Two further schools, deciles 6 and 9, had water stored, but not food. Thus, 14 schools had food and/or water stored. Of the six schools in the decile 1 to 5 range, five schools had food and water stored. Of the remainder, 9/16 schools had food and/or water stored.

Two schools, decile 3 and decile 8, reported not having discussed personal preparedness with staff. The decile 3 school had also not ensured that staff members were aware they would be required to remain at school after an emergency event to care for students until the students' caregivers arrived; the decile 1 school did not respond to this question. Four schools had not discussed arrangements with parents/caregivers in the case of parents/caregivers not being able to collect their children from school after a disaster event. Three of these four schools were in deciles 1 to 4.

All schools except the decile 1 school reported procedures for updating home-contact information for their students, in most cases updating being done several times a year.

While most schools reported that they invite EM professionals into their schools, it appears that most schools do this rather infrequently, with only three schools, deciles 6, 7 and 8, inviting EM professionals in on an annual basis.

Twelve schools reported seeking information from EM professionals, though none of these schools were in the decile 1 to 3 range. Of the schools that had sought information from EM professionals, most felt that the resources were adequate, as supported by participants' comments (see comments recorded after Table 23).

### 5.1.1 Summary of key findings

Two of the three schools that did not include any hazards education in their curriculum were in the decile 1 to 3 range. Schools in the decile 1 to 4 range made the least use of resources available from civil defence agencies, the least use of community group resources, and also employed the smallest range of hazards-education resources overall. Evaluation and review of hazard education was least often conducted in schools from decile 4 and below. Most of the schools had food and/or water stored at school, with little variation according to decile ranking. Schools in the decile 1 to 4 range reported the least discussion of personal preparedness with staff, and the least discussion with caregivers about arrangements for caregivers who would be unable to collect children from school should a hazardous event occur. The use of EM professionals to support hazard education in schools appeared minimal, with only three schools, deciles 6, 7, and 8, inviting EM professionals in on an annual basis. Although 12 schools reported seeking information from EM, none of these schools were in the decile 1 to 4 range.

## 6.0 CONCLUSIONS

Although it is not possible to determine a definitive cut-off point for what might be termed "lower decile" schools in this study, findings suggest that schools from deciles 1 to 4, and perhaps decile 5, may be in the greatest need of hazard education support. The authors acknowledge that the present study did not comprise an even spread of deciles, and that schools were weighted toward the higher decile range. However, schools in the lower deciles of the present study generally reported lower levels of hazard education and preparedness than schools in the upper deciles. These findings are consistent with a small study conducted by Tarrant and Johnston (2010) reporting similar trends, and also with findings for lower SES groups in Finnis (2004). In the absence of larger studies, a series of small studies can often contribute toward a growing understanding of a particular issue.

Research (e.g., Finnis et al., 2004) demonstrates that preparedness levels are consistently lower in areas with low household incomes, and where households include ethnic minorities. Consequently the benefit of ensuring that schools in these areas are supported in their hazard preparedness efforts can have positive repercussions for families and the wider community by enhancing their ability to respond effectively to hazard events. Due to the limitations on resource availability in homes in lower socio-economic communities, schools are required to play a larger role in preparing children, and by extension their families, for hazard events and emergencies. A proactive approach now, especially with lower SES communities, is likely to benefit schools in theses areas, and particularly to assist in building prepared and resilient communities for the future.

Regardless of limitations regarding the small sample size of this study, and particularly the small number of lower decile schools in this study, there is growing research-evidence that children and their families from lower SES areas are: (1) not as well prepared to cope with disasters as children and their families from higher SES areas; and that (2) children from

lower SES families do not achieve the same levels of educational achievement as children from higher SES families. Thus, greater efforts and resources are required for hazard preparedness in children from lower SES families. Alongside extra support for these children, there is a need for comprehensive investigation of hazards education and preparedness in schools, including the nature of current hazards education programmes and a systematic evaluation of learning outcomes.

Discussion on how greater hazards education efforts and resourcing might be provided for lower SES groups is beyond the scope of the present study. However, a first step may be that schools in lower SES areas develop supportive working relationships with EM professionals in their community, and work together to develop, deliver and assess effective hazard preparedness education programmes in the schools and community.

## 7.0 ACKNOWLEDGEMENTS

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