

Awareness on Sudden Volcanic Eruptions through Infographics

Leslie Jamie C. Cobar
Graduate School of Life and Environmental Sciences
University of Tsukuba, Ibaraki, Japan

Abstract:- Infographics is one of the recently utilized information, education and communication material in disasters. As there have been an increasing number of sudden volcanic eruptions and their hazardous impacts on people, this research aims to explore infographics as an awareness tool for mitigation of sudden volcanic eruptions. Comparison of pre- and post-test show the significant improvement of scores of test-takers after reading the infographics on the science of sudden eruptions, statistics of events, risks and mitigation practices.

Keywords:- Awareness; Infographics; Sudden Eruptions, Volcano.

I. INTRODUCTION

Awareness and disaster communication are integral actions in terms of mitigation of disasters. As an information, education and communication (IEC) tool, infographics have been utilized as a tool to communicate messages and provide awareness in various issues such as health and natural disasters[6]. Recently, sudden volcanic eruptions have been increasing as well as their impacts on people. Researches exist on awareness and communication of sudden volcanic hazards to the public[3]. However, the effectiveness of infographics recent increasing number of sudden volcanic eruptions and their hazardous impacts on people, this research aims to explore infographics as an awareness tool for mitigation of sudden volcanic eruptions.

II. METHODOLOGY

Infographics as the study material for sudden eruptions awareness was crafted in Canva, an online platform for graphic design and visualization. The infographics were developed by considering the following parameters:

- A. *Improvement of information on sudden volcanic eruptions* (Appendix A.)
- Science of sudden eruptions
 - Statistics of events
 - Common risks for people
- B. *Stressing the importance of countermeasures* (Appendix B.)
- Hardhat and proper equipment [1]
 - Shelters and evacuation plans
 - Responsibility

A pre- and post-test was conducted in June 2018 using ten (10) test questions about volcanic sudden eruptions and countermeasures. Sixty (60) random samples from the United States of America, 33 females and 27 males aged 18-74 years old, were employed to answer tests using SurveyMonkey[2][4][5]. After answering the pre-test, the responders were tasked to read the infographics, then re-take the examination. Out of the sixty (60), fifty-nine (59) had complete pre-test responses while, fifty-six (56) had complete post-test responses. Comparison of pre- and post-test scores and test of significance by McNemar's Test in GNU PSPP software.

III. RESULTS AND DISCUSSIONS

A. Pre-test and Post-test

Table 1a-b. shows the pre- and post-test answers for question 1: Volcanoes can erupt suddenly without prior warning. There was an increase in the "yes" respondents from 76% in the pre-test to 100% in the post test.

Table 2a-b. shows the pre- and post-test answers for question 2: A small volcanic eruption can result to deaths and injuries. There was an increase in the "yes" respondents from 95% in the pre-test to 100% in the post test.

Table 3a-b. shows the pre- and post-test answers for question 3: *Disaster prevention information must be read prior to hiking or visiting a volcano*. Results for pre- and post-tests were similar with 98% "yes" respondents.

Table 4a-b. shows the pre- and post-test answers for question 4: Evacuation maps and plans must be read and remembered before hiking or visiting a volcano. There was an increase in the "yes" respondents from 97% in the pre-test to 98% in the post test.

Table 5a-b. shows the pre- and post-test answers for question 5: Evacuation shelters must be located before hiking or visiting a volcano. There was an increase in the "yes" respondents from 88% in the pre-test to 96% in the post test.

Table 6a-b. shows the pre- and post-test answers for question 6: One should not take photos close to a "smoking" or "steaming" vent/crater of a volcano. There was an increase in the "yes" respondents from 62% in the pre-test to 96% in the post test.

Table 7a-b. shows the pre- and post-test answers for question 7: Proper equipment such as hiking boots, long-sleeved shirt/jacket and long pants, must be worn when hiking or visiting a volcano. There was an increase in the “yes” respondents from 93% in the pre-test to 98% in the post test.

Table 8a-b. shows the pre- and post-test answers for question 8: A hardhat must be worn before climbing or visiting a volcano. There was an increase in the “yes” respondents from 54% in the pre-test to 86% in the post test.

Table 9a-b. shows the pre- and post-test answers for question 9: A social GPS application must be downloaded before hiking or visiting a volcano so the authorities can monitor/control entrance and location of people for safety purposes. There was an increase in the “yes” respondents from 69% in the pre-test to 84% in the post test.

B. Validation

Tables 10a-b. show the cross-tabulation and test statistic for the pre- and post-tests of infographics on sudden volcanic eruptions. The level of significance is at 0.00 which indicates the intervention’s possibility as an effective tool for awareness on sudden volcanic eruption disasters.

IV. CONCLUSION

Infographics can be a useful and practical tool in terms of promoting awareness on sudden volcanic eruptions. Communication of specific hazards such as ballistics and proper countermeasures through the use of photos and short but critical messages can help responders and officials in mitigation of future sudden volcanic events.

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ANSWER CHOICES	RESPONSES
Yes	76.27% 45
No	23.73% 14
TOTAL	59

Table 1a:- Pre-Test Answers For Question 1.

ANSWER CHOICES	RESPONSES
Yes	100.00% 56
No	0.00% 0
TOTAL	56

Table 1b:- Post-Test Answers For Question 1.

ANSWER CHOICES	RESPONSES	
Yes	94.92%	56
No	5.08%	3
TOTAL		59

Table 2a:- Pre-Test Answers For Question 2.

ANSWER CHOICES	RESPONSES	
Yes	100.00%	56
No	0.00%	0
TOTAL		56

Table 2b:- Post-Test Answers For Question 2.

ANSWER CHOICES	RESPONSES	
Yes	98.31%	58
No	1.69%	1
TOTAL		59

Table 3a:- Pre-Test Answers For Question 3.

ANSWER CHOICES	RESPONSES	
Yes	98.21%	55
No	1.79%	1
TOTAL		56

Table 3b:- Post-Test Answers For Question 3.

ANSWER CHOICES	RESPONSES	
Yes	96.61%	57
No	3.39%	2
TOTAL		59

Table 4a:- Pre-Test Answers For Question 4.

ANSWER CHOICES	RESPONSES	
Yes	98.21%	55
No	1.79%	1
TOTAL		56

Table 4b:- Post-Test Answers For Question 4.

ANSWER CHOICES	RESPONSES	
Yes	88.14%	52
No	11.86%	7
TOTAL		59

Table 5a:- Pre-Test Answers For Question 5.

ANSWER CHOICES	RESPONSES	
Yes	96.43%	54
No	3.57%	2
TOTAL		56

Table 5b:- Post-Test Answers For Question 5.

ANSWER CHOICES	RESPONSES	
Yes	62.71%	37
No	37.29%	22
TOTAL		59

Table 6a:- Pre-Test Answers For Question 6.

ANSWER CHOICES	RESPONSES	
Yes	96.43%	54
No	3.57%	2
TOTAL		56

Table 6b:- Post-Test Answers For Question 6.

ANSWER CHOICES	RESPONSES	
Yes	93.22%	55
No	6.78%	4
TOTAL		59

Table 7a:- Pre-Test Answers For Question 7.

ANSWER CHOICES	RESPONSES	
Yes	98.21%	55
No	1.79%	1
TOTAL		56

Table 7b:- Post-Test Answers For Question 7.

ANSWER CHOICES	RESPONSES	
Yes	54.24%	32
No	45.76%	27
TOTAL		59

Table 8a:- Pre-Test Answers For Question 8.

ANSWER CHOICES	RESPONSES	
Yes	85.71%	48
No	14.29%	8
TOTAL		56

Table 8b:- Post-Test Answers For Question 8.

ANSWER CHOICES	RESPONSES	
Yes	69.49%	41
No	30.51%	18
TOTAL		59

Table 9a:- Pre-Test Answers For Question 9.

ANSWER CHOICES	RESPONSES	
Yes	83.93%	47
No	16.07%	9
TOTAL		56

Table 9b:- Post-Test Answers For Question 9.

Pretest & Posttest		
Pretest	Posttest	
	0	1
0	12	31
1	1	12

Where:
 0 – Pass (perfect score)
 1 - Fail

Test Statistic	
	Pretest & Posttest
Frequency	56
Chi-square	26.281
Significance	.000

Tables 10a-b:- Cross-Tabulation And Test Statistic

APPENDIX A. INFOGRAPHICS WITH REFINED INFORMATION ON SUDDEN ERUPTIONS



Fig 1

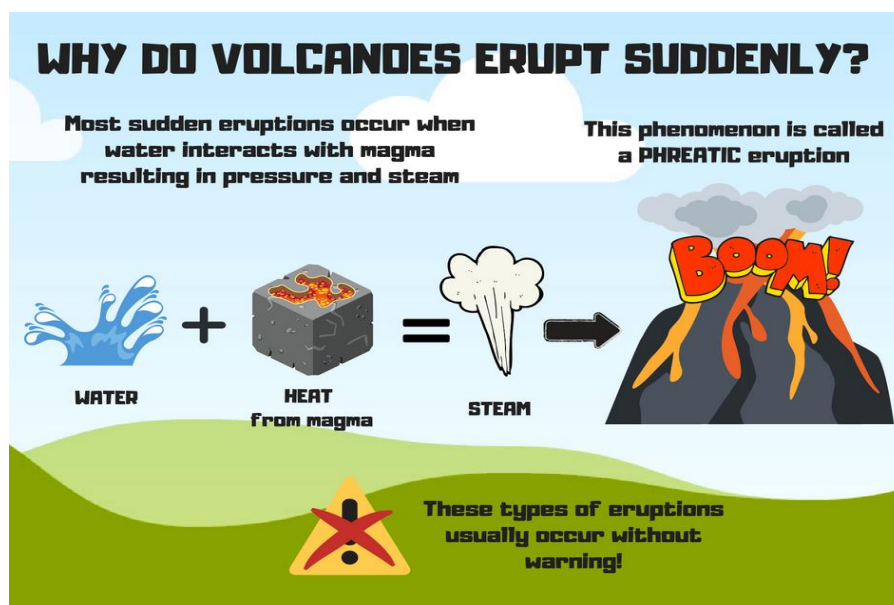


Fig 2

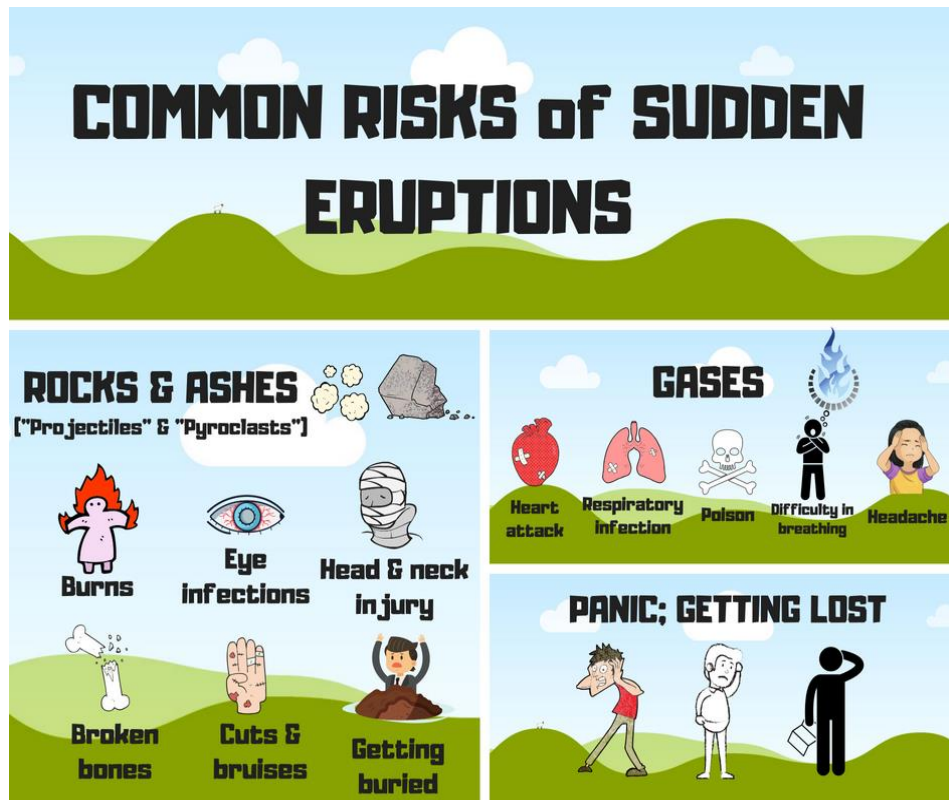


Fig 3

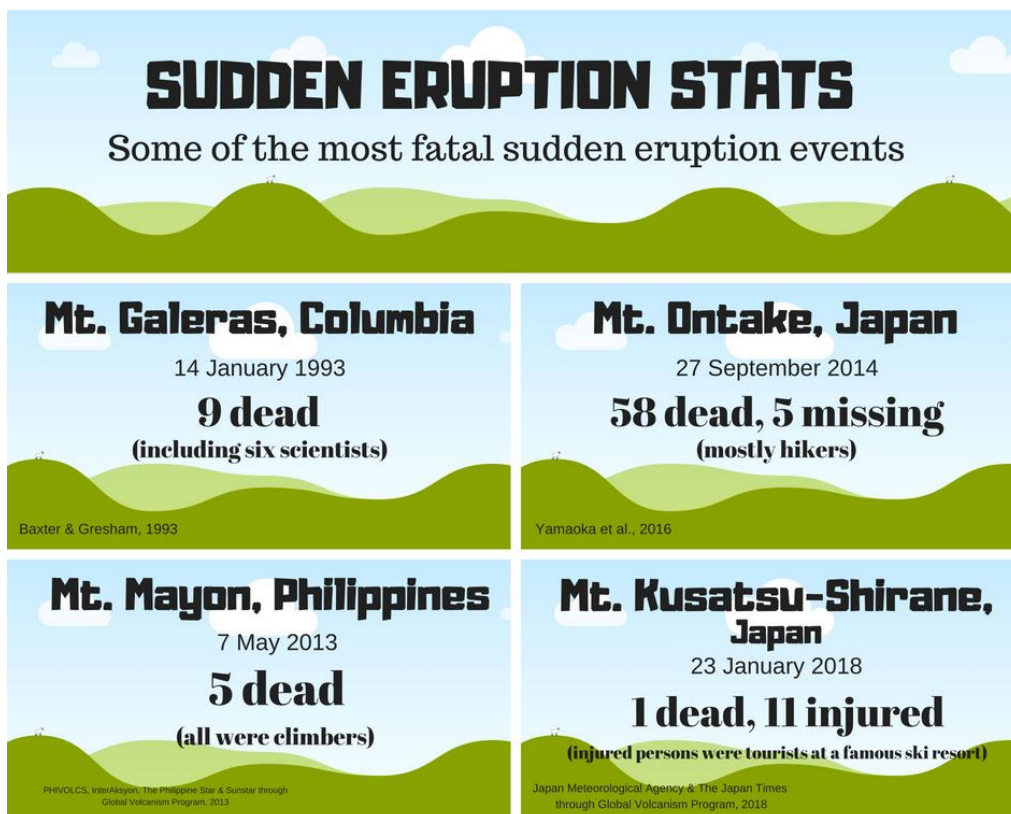


Fig 4

APPENDIX B. INFOGRAPHICS STRESSING THE IMPORTANCE OF COUNTERMEASURES



Fig 5

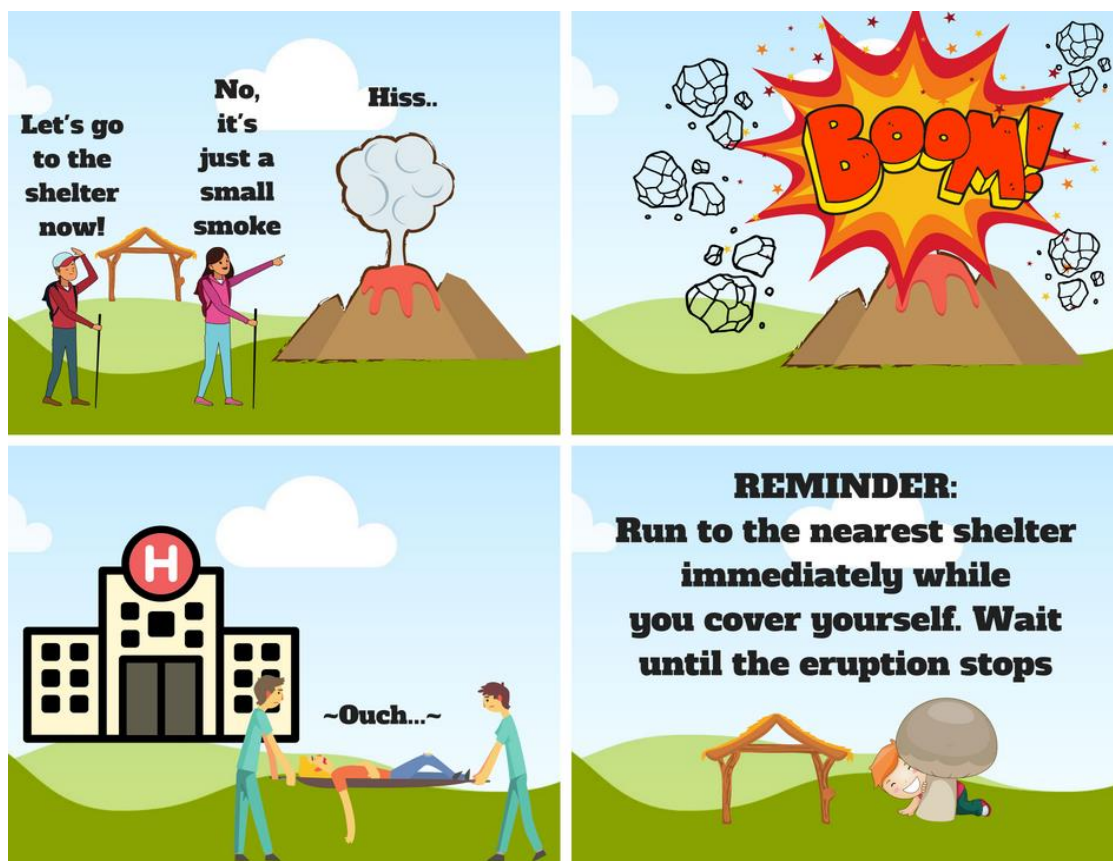


Fig 6

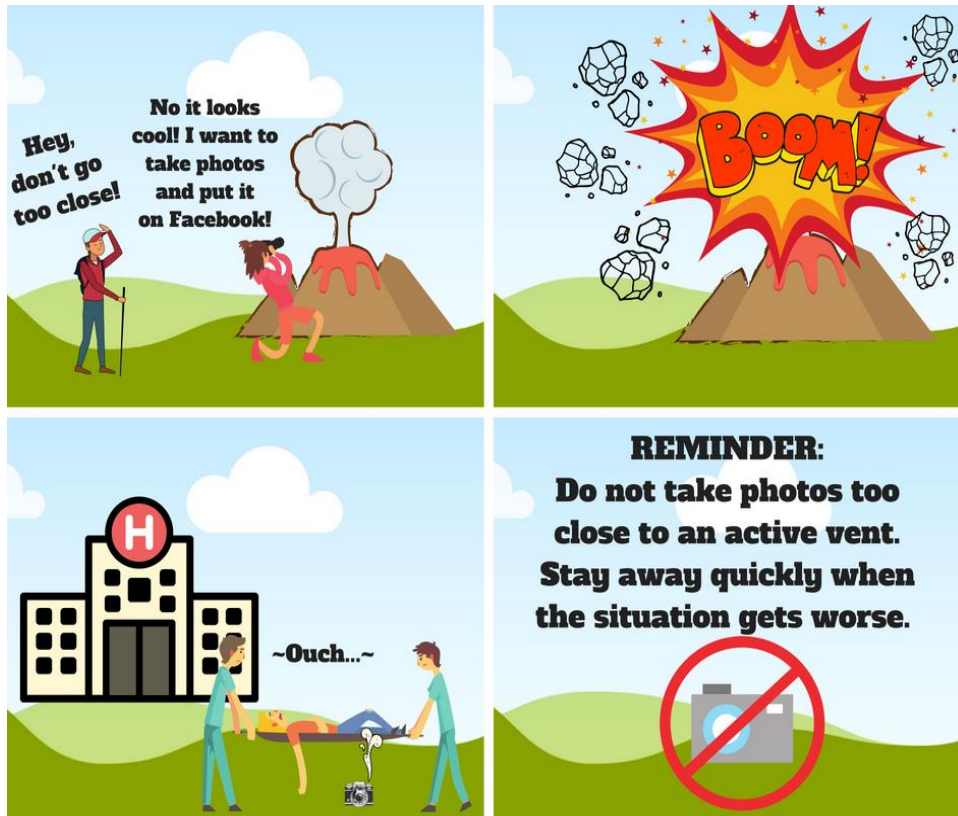


Fig 7

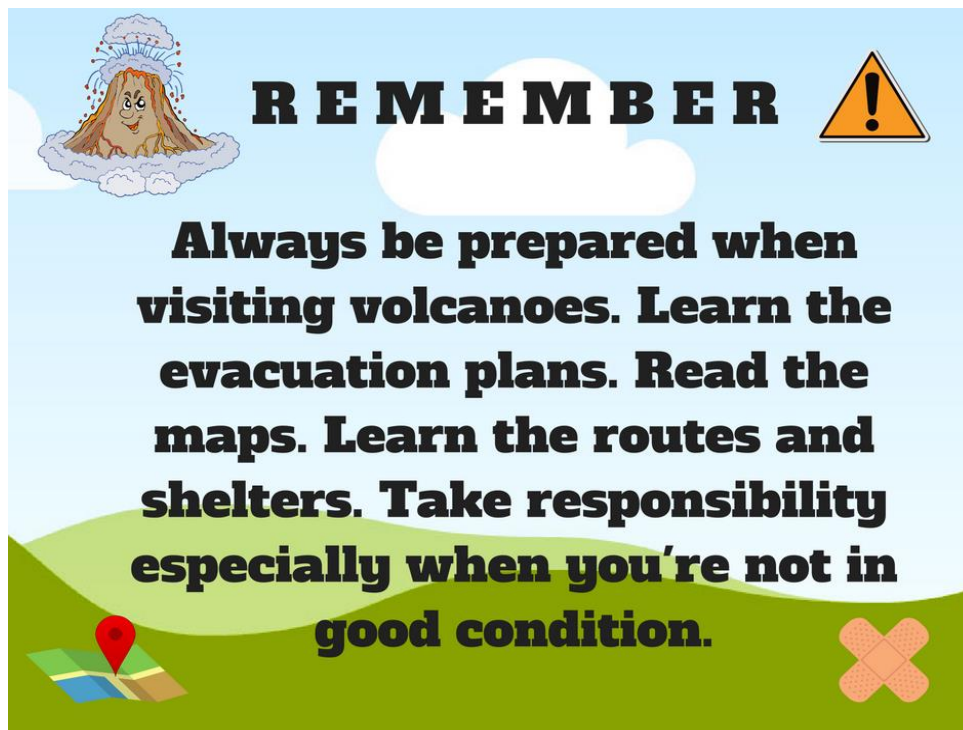


Fig 8