A Study of School-Based Curriculum to Disaster Prevention Teaching for Sixth Graders in the Elementary School

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Introduction

In recent years, global natural disasters around constantly. Taiwan is located in East Asia, for Taiwanese feel most and understand is Tohoku earthquake in Japan 11st March 2011. 9.0 Richter scale earthquake shocked the world. Earthquake along with tsunami caused 15,636 deaths.

Geographical environment and climate similar to Taiwan and Japan, both Taiwan and Japan are island state surrounded by sea. Many frequent natural disasters happens in Taiwan and Japan. Apart from the above mentioned earthquake and tsunami, typhoon、Cloudburst、Mudslide、Fire also often happens in life. The occurrence of natural disasters caused huge losses to the life of the country's economy and the people, if we can do disaster prevention well, and learn the right knowledge and ideas about disaster prevention from an early age, there is a considerable contribution for Social prosperity and stability.

Japan puts a lot of effort on disaster prevention education. In Japan, the learning guidelines of disaster prevention education promulgated by government has mentioned 「Strength to survive (生きる力)」, when disaster happens how to survive successfully is the most important thing than others. The goal of disaster prevention education is「Cultivate the ability to make the most appropriate response in times of disaster comes」that is 「Strength to survive (生きる力)」. Japanese disaster prevention education is worth following for Taiwan. Therefore, this thesis designs disaster prevention education curriculums and takes the senior students of primary school as objects. Unlike traditional teaching way that always teaches with books. We design the class that teaching students by games. We let students form groups to play games. Through playing games, students are inspired. They have to think about how disasters happen and when disasters happened how we can survive. During the whole process of playing games, students can combine their own experience and knowledge

that learned in class to answer questions or debate with others if they have different answers.

Curriculum Design and working technique (Course time 160mins/4class)

This curriculum design of disaster prevention on education has been taught at primary school of Keelung city in Taiwan. At the beginning of class, we let students to do a test about disasters knowledge, the questions including typhoon, fire, earthquake, tsunami and first aid emergency treatment. Through the text, we can find out how much students know about natural disaster before playing games. After the text, we won't give students the right answers but start class by showing photos of different disasters. When students look at photos, we ask them if they know what kind of disaster that photo shows and do they have any experience connect with disasters.

In this stage, we encourage students to share and do speech with classmates. Also we can find out before and after this class if students really know about natural disasters and raise their ability to face any situation when disaster comes.

Finishing the first stage of pre-text, showing photos and sharing experience, we make students into several groups, each group has 4~5students and 1 tablet PCs to start second stage－Disaster Prevention Monopoly. The rules of Disaster Prevention Monopoly just like normal Monopoly that everyone had played. Students have to choose right answer in order to get chance to continue dicing. The first one to goal is winner and will be awarder Expert of Disaster Prevention. Most questions are situational questions that when disaster comes can students survive or not all decided by what answer they chose. Also we can find out if disaster prevention education in the pass did really give students right or useful knowledge or not. And any knowledge or skills that we have to teach students in the future. In this stage, some questions in Monopoly are same or similar to pre-text, if students didn't know for sure the answer, they can get right answer in this game.

Aims of this research

The primary aim of this research was to increase response capability of school children when natural disaster happened as well as to discuss how disaster prevention course influenced three aspects in terms of disaster prevention, which were concepts of disasters, concepts of disaster prevention and attitudes toward disaster prevention, on fifth graders in elementary schools, and the relevance amongst these three aspects.

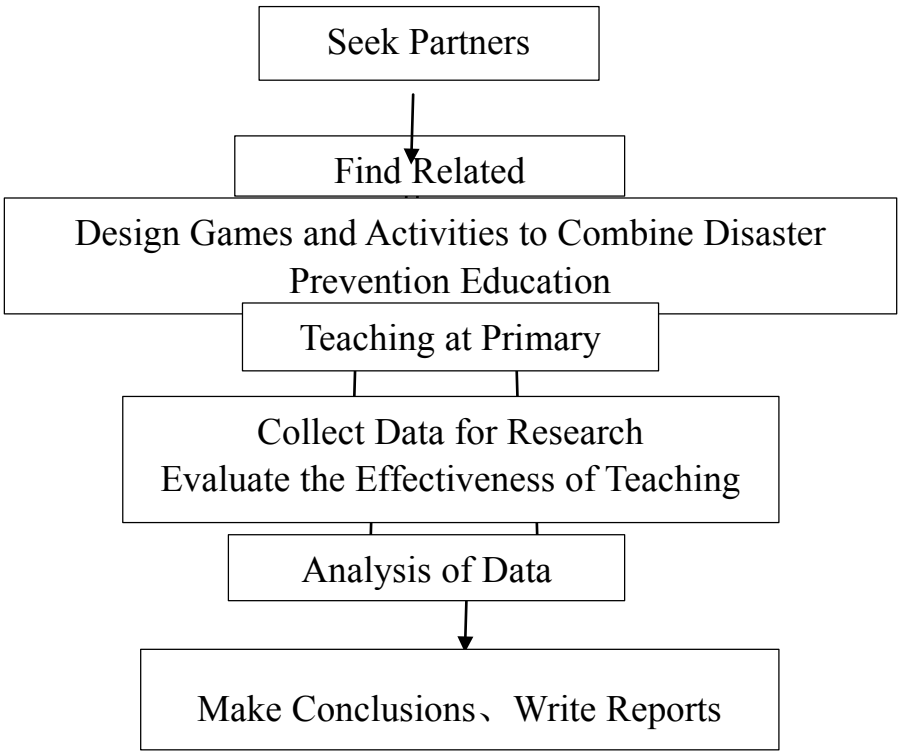
The Questionnaire Survey on disaster prevention education generated by the researcher were used as vehicles in this research. Subjects in this research were senior pupils in an elementary school in Keelung, with 75samples from the fifth grade for

Questionnaire on a study of school-based curriculum to disaster prevention teaching for fifth graders of the elementary school in Taiwan. The raw data were analyzed with percentile rankings, paired t test, and Pearson Correlation Coefficient.

The primary results and suggestions of this research were as follows:

1. Each preconception of fifth graders about tsunami was still at the superficial level, with none of the interviewees could respond accurately on tsunami and the cautions of tsunami in particular.
2. The average scores of the concepts of disaster prevention improved. Scores in pre-test and post-test were significantly discrepant, which indicates disaster prevention course was useful to raise students' awareness of disaster prevention.
3. The average score of the questionnaire which referred to students 'attitudes toward disaster prevention increased from 9.82 to 12.93 after the disaster prevention course. This indicated that there was a significant discrepancy($t=11.847$，$p < .001$) between pre-test and post-test on students' attitudes toward disaster prevention. Most of responses to the questionnaire were positive.
4. This research made a suggestion that government should enhance teaching training on disaster prevention course so as to integrate disaster prevention course into current curriculum for children to learn the concept of disaster prevention as a whole.

The Process of Curriculum Design on Disaster Prevention Education



✧ **Questionnaire Analysis of Pre-text and Post-text**

成對樣本統計資料

		平均數	N	標準偏差	標準錯誤平均值
對組1	前測總分	9.8267	75	1.44609	.16698
	後測總分	12.9333	75	1.10690	.12781
對組2	前測颱風	3.2000	75	1.01342	.11702
	後測颱風	3.8000	75	.98639	.11390
對組3	前測火災	3.2267	75	.72733	.08398
	後測火災	3.8667	75	.34222	.03952
對組4	前測地震	2.8800	75	.83763	.09672
	後測地震	4.5733	75	.70084	.08093
對組5	前測海嘯	.0000	75	.00000	.00000
	後測海嘯	.0133	75	.11547	.01333
對組6	前測急救	.5200	75	.50296	.05808
	後測急救	.7733	75	.42149	.04867

成對樣本檢定

	程對差異數					T	df	顯著性（雙尾）
	平均數	標準偏差	標準錯誤平均值	95% 差異數的信賴區間				
				下限	上限			
對組1 前總分 - 後總分	-3.10667	1.74428	.20141	-3.50799	-2.70534	-15.424	74	.000
對組2 前颱風 - 後颱風	-.60000	.90045	.10398	-.80717	-.39283	-5.771	74	.000
對組3 前火災 - 後火災	-.64000	.70978	.08196	-.80330	-.47670	-7.809	74	.000
對組4 前地震 - 後地震	-1.69333	1.05232	.12151	-1.93545	-1.45122	-13.936	74	.000
對組5 前海嘯 - 後海嘯	-.01333	.11547	.01333	-.03990	.01323	-1.000	74	.321
對組6 前急救 - 後急救	-.25333	.46770	.05400	-.36094	-.14573	-4.691	74	.000

主旨內係數

測　　量　　：　MEASURE_1

factor1	因變數
1	VAR00045
2	VAR00046
3	VAR00047
4	VAR00048
5	VAR00049

描述性統計資料

	平均數	標準偏差	N
颱風答對比例 1	.7600	.19728	75
火災答對比例 2	.9667	.08556	75
地震答對比例 3	.6533	.10012	75
海嘯答對比例 4	.0133	.11547	75
急救答對比例 5	.7733	.42149	75

Mauchly 的球形檢定[a]

測量:　MEASURE_1

主旨內效果	Mauchly's W	大約卡方	df	顯著性	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	下限
factor1	.086	177.989	9	.000	.448	.459	.250

檢定標準正交化轉換因變數的錯誤共變異數矩陣是恆等式矩陣比例的空假設。

a. 設計：截距

主旨內設計：factor1

b. 可以用來調整顯著平均檢定的自由度。更正的檢定顯示在「主旨內效果檢定」表格中。

主旨內效果檢定

測量:　MEASURE_1

來源		第 III 類平方和	df	平均值平方	F	顯著性	局部 Eta 方形
factor1	假設的球形	39.867	4	9.967	197.010	.000	.727
	Greenhouse-Geisser	39.867	1.792	22.242	197.010	.000	.727
	Huynh-Feldt	39.867	1.834	21.737	197.010	.000	.727

	下限	39.867	1.000	39.867	197.010	.000	.727
Error(factor1)	假設的球形	14.975	296	.051			
	Greenhouse-Geisser	14.975	132.640	.113			
	Huynh-Feldt	14.975	135.720	.110			
	下限	14.975	74.000	.202			

來源	第 III 類平方和	df	平均值平方	F	顯著性	局部 Eta 方形
截距	150.417	1	150.417	3350.429	.000	.978
錯誤	3.322	74	.045			

※邊緣平均數估計

估計值

測量: MEASURE_1

factor 1	平均數	標準錯誤	95% 信賴區間	
			下限	上限
1	.760	.023	.715	.805
2	.967	.010	.947	.986
3	.653	.012	.630	.676
4	.013	.013	-.013	.040
5	.773	.049	.676	.870

成對比較

測量: MEASURE_1

(I) factor1	(J) factor1	平均差異 (I-J)	標準錯誤	顯著性[b]	95% 差異的信賴區間[b]	
					下限	上限
1	2	-.207*	.028	.000	-.262	-.152
	3	.107*	.024	.000	.058	.155
	4	.747*	.027	.000	.692	.801
	5	-.013	.053	.801	-.118	.092
2	1	.207*	.028	.000	.152	.262
	3	.313*	.016	.000	.281	.345
	4	.953*	.019	.000	.916	.991

	5	.193*	.051	.000	.092	.295
3	1	-.107*	.024	.000	-.155	-.058
	2	-.313*	.016	.000	-.345	-.281
	4	.640*	.017	.000	.606	.674
	5	-.120*	.052	.023	-.223	-.017
4	1	-.747*	.027	.000	-.801	-.692
	2	-.953*	.019	.000	-.991	-.916
	3	-.640*	.017	.000	-.674	-.606
	5	-.760*	.050	.000	-.859	-.661
5	1	.013	.053	.801	-.092	.118
	2	-.193*	.051	.000	-.295	-.092
	3	.120*	.052	.023	.017	.223
	4	.760*	.050	.000	.661	.859

根據估計的邊際平均值

*. 平均值差異在 .05 層級顯著。

b. 調整多重比較：最小顯著差異（等同於未調整）。

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