



防災教育白皮書

White Paper on Education of Disaster Prevention

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教育部 編印

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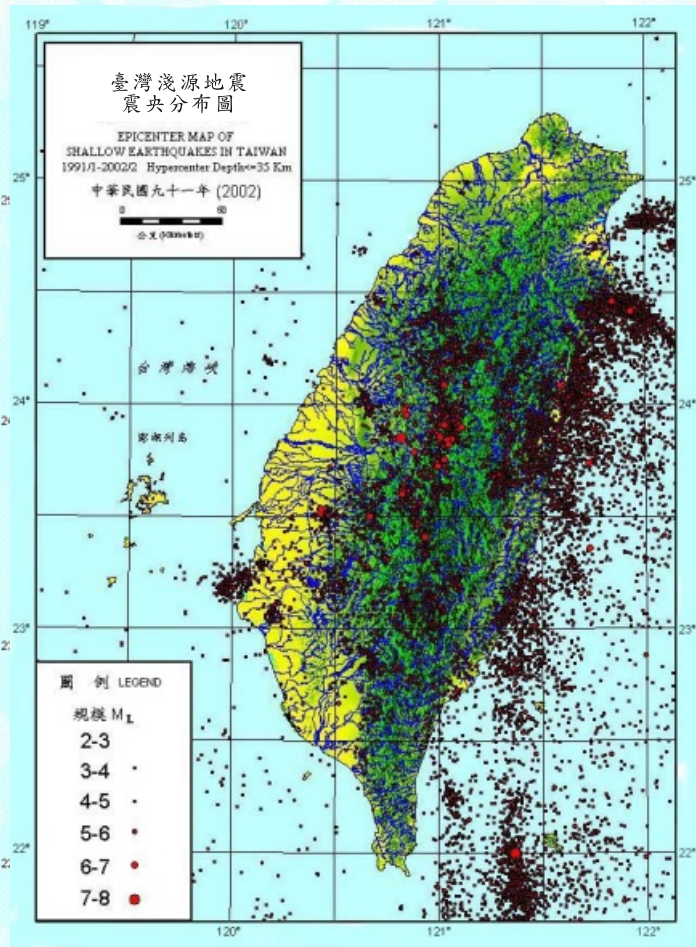
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資料來源：國立中央大學應用地質研究所

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Taiwan is known to all for its striking beauty contributed by the great nature, only its location in the seismic zone and the sub-tropical trade wind region in the Pacific Rim make the island vulnerable to repeated earthquakes, typhoons and other catastrophes. On the other hand, rapid growth of the industrial and commercial activities, highly urbanized communities invite other calamities triggered by mankind that could be otherwise avoided. Catastrophes or calamities cause severe casualties and devastating loss in materials. To deal with these disasters that many times seem otherwise avoidable, the government has been waging efforts and funds in both prevention and rescue tasks, only the rapid changing community and environment demands correction and review of these efforts, especially when it comes to propagation of disaster information. If we could make the population be aware of and ready for calamities through appropriate campaigns, casualties and properties loss would be minimized significantly.

Therefore, based on the proposals reached in the 6th National Science & Technology Conference, the National Science & Technology Development Plan and the 2nd National Technology Plans, the Ministry of Education is proposing this white paper that contains tasks and issues concerning disaster prevention and mitigation education. Sound disaster prevention and mitigation education policies are expected and at the same time, for people of different ages, literature with graphics shall be prepared for successful education. In the future, more materials and updated strategies shall be introduced to make each and everyone in the community be fully aware of disasters and how should an overall disaster mitigation task work.

As this white paper is being printed, Taiwan has seen itself victim to 2 typhoons in 2 months leaving its central and northern mountains severely damaged. What needs to be restored is not only the landscape, it's the population's awareness of disasters, readiness and, more important, to teach people show respect to Mother Nature. Disaster prevention and mitigation education can never be achieved overnight, this permanent task demands a sound concept and rooted education. Only when the entire population becomes prepared and properly educated for reaction, Taiwan would then expect to see minimum damage.

This white paper is the beginning of a new disaster prevention and mitigation education policy and it shows how serious the government concern goes. Its announcement is not an end; it's a start. All tasks involved need to be executed and monitored on a continuous and synchronized basis. Finally, I like to sincerely thank all scholars and experts who have made this publication possible. We have worked carefully for this publication; still, we would appreciate comments, if any.

Minister of Education



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序論

台灣位處板塊交界處，又屬副熱帶季風區，每年的地震、颱風等天然災害不斷，不僅無法避免，甚至地震的發生更無法事先預測。而且只要有人類活動的行為發生，就會有人為災害產生的可能性。既然災害無法避免，防救災工作就顯得格外的重要。

防救災業務之目的在減輕人民與社會的災害風險，完善的防救災對策牽涉廣泛，且須有堅實的科技研發為基礎，但其實施與執行則有賴中央政府各部會、各級地方政府、民間團體、學校、社區及每個國民的密切協調和參與，才能發揮最大功效。另防災教育之目的在於提昇民眾對災害的認知，培養民眾具備良好之防災素養，以強化社會抗災能力減輕人民與社會的災害風險。

教育部提出防災教育白皮書，據以訂定妥善的防災教育政策，透過相關教材的編撰及教育的推廣等策略，將防災的理念深植於社會各階層，讓民眾認識台灣本土性災害特性並增加災害防治的知識，進而提升大眾防災意識與整體防災工作效能。以協助規劃及歸納相關防災教育近、中及遠程目標，並將國內防救災教育導向永續經營發展。

Taiwan is located at the Plates Boundaries as well as sub-tropical monsoon zone, which brings us continual natural disasters like earthquakes and typhoons. These are not only unavoidable, some, like earthquakes, can not be forecasted at all. In addition to natural disasters, where there are human activities, there are possible man-made disasters. Since calamities are not to be shunned, the disaster prevention and rescue is extraordinarily important.

The purpose of the disaster prevention and rescue is to reduce the risk of calamities to people and the society. Faultless countermeasures involve wide range of aspects and have to base on solid technology research and development. However, in order to put it into practice requires participation and close collaboration from various ministries and commissions in central government, lower level government administrations, civilian organizations, schools, communities, and every individual citizen to brought all efforts into full efficiency. In addition, the purpose of disaster prevention and rescue education is to bring public awareness, to foster general capacity of general public. As a result, the whole society can become well equipped to fight with disasters and the risk to people and the society can be minimized.

Ministry of Education proposed this Education of Disaster Prevention White Paper, based on which relevant policies should be properly established. It is anticipated through the compiling teaching materials and strategies for educational programs. The concept of disaster prevention shall be embedded into all levels of the society. In the meantime, people would become more familiar with domestic disaster characteristics and gain more knowledge of disaster prevention. The awareness of disaster prevention and overall efficiency would be raise after all. This White Paper will also assist in planning the short term, intermediate range, and long term objectives. The ultimate goal is to have sustainable development disaster prevention of the education in our country.

1章

防災教育白皮書

第一章 Chapter 1

白皮書緣起
Origin of White Paper

◆ 前言

台灣的地理環境特殊，恰位於歐亞大陸板塊與太平洋菲律賓海板塊交界處。由於地殼運動關係，板塊在交界處的相互碰撞、擠壓與張裂，衍生地表破碎、地塊隆升，使得台灣島造山運動迅速，讓台灣成為世界上有感地震最頻繁的地區之一。另外，台灣亦處於副熱帶季風區，每年五、六月間會有梅雨來臨，六至十月間則為颱風好發季節，此等特殊氣候，常帶來豪雨與強風，造成大量農作物損毀；加上台灣地形陡峻、河川短急，易引發嚴重水災，導致可觀之經濟損失與人員傷亡。

除了無法避免的天然災害外，有人類活動的行為發生，就會有人為災害產生的可能性。一般而言，除了居家及人為惡意所造成的災害，意外災害的發生就屬工廠及實驗場所為最頻繁之區域。國內近年來發生許多的重大災害事件，包括火災、爆炸、毒氣外洩、工程施工意外等，所造成的原因不外乎人為的疏失及人為的不當操作、儀器的老舊故障、化學藥品的不當使用及儲存、廢棄物品處理不當、缺乏落實有系統的管理規定、缺乏適當的災害預防與應變的教育訓練等，其所造成的損失則會直接影響國家產業的發展。



火災為常見之人為災害種類之一。

❖ Introduction

Taiwan has unique geographical features. The island is located at the boundaries of Eurasian Plate and Pacific-Philippine Plate. Due to Plate Tectonics, collision, subduction, and spreading are frequent in the boundaries, which cause crust fracture and uplift of the stratum, are frequently happened in the boundaries. In turn, the mountain building process in Taiwan has very fast movement, which makes this island one of the area in the earth with the most frequent sensible seismic. In addition, Taiwan is also located at the sub-tropical monsoon zone with plum rains during Mays and Junes and typhoons during Junes through Octobers. Such unique features in climate often bring heavy rains and strong winds that cause serious agricultural damages. The steep landforms and jet streams in the island make the situation even worse because floods usually arise that cause considerable losses in the economy and human lives.

In addition to the unavoidable natural disasters, where there are human activities, there are possible man-made disasters. Generally speaking, except for man-made malicious disasters, accidents occur mostly in factories and laboratories. There have been some serious recent disasters, including fire hazards, explosions, leakage of hazardous gases, accidents at construction sites, and etc.

The causes of the above disasters include negligence, improper manipulation, obsolescence and malfunction of machines, improper usage and storage of chemicals, improper waste disposal, lack of practicable and systematic administrative regulations, lack of adequate education and training of disaster prevention and handling. The overall losses are eventually affect developments of industries in our country.



Fire hazard is a common man-made

隨著我國教育體制的改變、教育普及化，使得校園內實驗室的數量大幅增加，更由於申請研究計畫內容趨於多元化以及部分學術研究也傾向於計畫導向，所以實驗的製程設計上相對複雜化且困難性增加。實驗過程中往往必須經常變更操作流程或研發新的製程，使用的機械、儀器、設備及原物料多樣化；再加上實驗室學生及相關人員的流動率甚高，以及忽略或漠視安全衛生管理之規定，種種因素導致實驗場所的危險因子擴大，因此意外事故的發生率大大的提高，不僅是大學實驗室有意外發生，國中、小學生的課外理化教室亦有火災與爆炸的意外發生。

從各國防災教育工作推展經驗來看，學校的防災教育重點在於：對災害的認知、防災的態度、事前準備、合宜的緊急應變措施、定期演習、建立社群為單位的防災系統、家長的參與、學校行政人員及教師的防災訓練、建築物安全訊息、防救災相關研究以及國際防災合作等等。從這些重點來看，國外的防災教育著重的是具體行動的實踐，雖然對災害的知識層面之認識也是要點之一，然而防災系統的建立進而維護生命財產安全，才是防災教育的最終目的。

Following changes of educational system in our country and popularization of education, the number of laboratories in campuses increases dramatically. Due to diversification and project oriented research interests, lab procedures have become increasingly difficult and complicated. In turn, more and more materials, equipment and apparatus are involved, adding up the high circulation rate of lab personnel, negligence and ignorance may lead to fire hazards and explosions in labs, which occur not only in universities, but even found in junior schools.

Based on experience of other countries, the education of disaster prevention in schools shall be focused on the following: awareness of disasters, attitude toward prevention, preparation beforehand, appropriate countermeasures, scheduled drills, establishment of community based prevention units, parental participation, training programs for teachers, safety warning signs for public buildings, research on disaster prevention and international collaboration. The key of the above emphases is action and practice. Although knowledge of disasters is important, how to set up prevention units in order to safeguard lives and property is the utmost goal of education of disaster prevention.

❖ 第一節 災害產生之影響

依據國內學者對台灣地區降雨量變化趨勢之研究顯示，近百年來台灣的降雨量有逐漸增加的趨勢，但降雨日數卻逐漸降低，顯示降雨強度日漸提高，因而發生洪災的機率大為增加。同時，從1980年以後，台灣地區各氣象測站降雨量的紀錄屢創新高，單次降雨量亦不斷創新，造成都會區淹水、山區土石流成災的機率將大為提高。因此，不論治山、防洪或都市區域排水的難度將愈來愈高，若未能妥為考慮氣候變遷及降雨量變化趨勢，往後的洪患將更為嚴重。

台灣在地震災害方面，因歐亞大陸板塊與太平洋菲律賓海板塊推擠效應，於板塊交界附近逐年累積能量，台灣地區平均約三十年發生一次重大地震，平時亦常有致災地震，可能造成嚴重的傷亡與財產損失。以八十八年九二一地震為例，全國共有二四五五人死亡，五十人失蹤，重傷七五五人，三萬八千九百三十五戶房屋全倒，四萬五千三百二十戶房屋半倒。」（資料來源：重建會生活處）。不僅造成人民生命財產蒙受重大損失，災民身心與生活深受衝擊，亦導致包括水電維生系統、學校、醫院、道路、橋樑等公共設施大量毀損；自然環境的驟變、產業生產設施的破壞，造成災區產業巨大損失；失業率驟升，整體經濟發展亦受到重創。估計可以貨幣化的有形直接損失超過新台幣三千六百億元，如果加上間接損失，總損失達新台幣一兆元。此等重大災害所造成之損失與衝擊，將隨都市化程度之提高而增加，是以如何強化防救災工作，實乃刻不容緩之事。



1 Impact of Disasters

According to the study on the precipitation in Taiwan made by domestic scientists, the rainfall in Taiwan tends to increase in the past century; however, it means days of precipitation drops gradually, which suggests a rise in the intensity of the rain and strong probability of floods. In addition, starting 1980 record-breaking precipitation data from various weather stations have caused floods in metropolitan areas and disastrous debris flows in mountains. Inundation will become more serious in the future if we ignore the transition of climate and fail to tackle mountain treatment, river regulation, and water drainage issues.

Taiwan is located at the boundaries of Eurasian Plate and Pacific-Philippine Plate. Due to Plate Tectonics, energy is accumulated in the boundaries, which will induce major seismic, which happen once every 30 years in average and cause serious losses in lives and properties. Take the Chi-Chi Earthquake in 1999 as an example, 2405 people lost their lives, 52 were missing, 701 were seriously injured. More than 100,000 houses were collapsed or damaged. Earthquakes not only cause losses in lives and property but also cause mental impact on victims and massive damage to the infrastructure of the society. The abrupt changes of the natural environment eventually heavily struck the industry in the disaster area as well as whole nation. The total losses caused by Chi-Chi Earthquake is up to NT\$ 1 trillion with NT\$ 360 billion tangible direct losses. The figures may be even higher as a result of high urbanization. Disaster prevention and rescue now demands immediate attention and great urgency.



災害的產生影響國家產業發展甚巨。

由於台灣所處之區域，無法避免颱風、地震等天然災害的發生，必須盡可能設法減輕災害造成之損失。上述颱風、豪雨、地震等天然災害，對社會造成之直接財物損失，平均每年即高達新台幣三百億元。若平時做好減災預防工作，災時採取有效因應措施，強化社會整體抗災能力，假使每年可減少30%因天然災害造成之損失，則相當於每年可產生約新台幣九十億元之直接經濟效益，對社會之繁榮與安定有相當大之助益。

其次就人為災害而論，少數的意外災害是發生在居家環境及校園內，絕大多數的人為災害的案例發生在產業工作中，以1998年為例，國內全國產業勞工罹災人次有29095人次，平均每小時就有三名勞工因工作而受傷、殘廢或死亡，勞工保險給付高達68.5億元，造成的直接與間接損失更難以估計，所以行政院勞工委員會先後研訂「加強勞工安全衛生方案」、「工作安全災害歸零方案」、「勞動安全產業升級方案」等，作為勞工安全衛生政策推行之主軸，使得職業災害率有明顯的下降，當時我國職業災害千人率雖從1987年5.91降至1998年的3.86；可是與其他先進國家比較，我國勞工職業災害率仍屬偏高（例如：1998年我國勞工死亡千人率為0.084，同年美國為0.050，日本為0.024，英國為0.008），顯示我國在職業災害的防治工作仍有待努力。



Disaster hinders industrial development

Typhoons, earthquakes, and natural disasters are unavoidable in Taiwan because of her unique geographical features. It is estimated the annual loss of properties caused by typhoons, torrential rains, and earthquakes reach NT\$30 billion. If disaster prevention and mitigation could be well done beforehand, if efficacious measures could be taken offhand, if the capacity for combat disasters could be strengthened, the annual losses would be reduced by 30%, or NT\$9 billion in terms of economic benefits, which will aid prosperity and stability to our society.

Man-made disaster is the next threat. Only few accidents happen at homes and campuses. Most of them happen in the industrial working environment. In 1998, there were 29095 person-time meeting disasters, about three persons got injured, maimed, or killed in every one hour. Insurance benefits reach as high as NT\$6.85 billion. Actual losses are beyond estimation. In order to tackle this issue, Council of Labor Affairs of Executive Yuan drafted three programs: Improving Labor Safety and Health Program, Work Safety and Zero Disaster Program, and Work safety and Industry Upgrade Program, and carried out labor safety and health policies based on these programs. Results are encouraging. The occupational disaster rate per thousand workers dropped obviously to 3.86 in 1998 as compared with 5.91 in 1987. However, such figure is still higher than that of some foreign countries. For example, the labor mortality per thousand workers in our country in 1998 is 0.094. In the same year, the figure in USA is 0.045, in Japan 0.037, and in UK 0.001, which suggests that there is still plenty room for improvement.

❖ 第二節 防災教育之推廣沿革



平時做好防災教育，便可於災時發揮自救及助人的技能。

我國民眾對於災害的問題一向非常關心，而政府部門也都很重視災害防治工作，歷年來投入相當多的人力與財力於防救災業務上，防災科技研究工作亦逐年增多。但由於經濟發展與社會變遷快速，使得防災工作有跟不上的情形，特別是大眾防災教育普及方面。由於社會大眾缺乏對災害的認識，致事前災害預防不足，災害發生時應變處理上又缺乏相關的輔導與諮詢，種種盲點均亟待消除。

因此行政院為健全國內災害防救法令及體系、強化災害預防、執行搶救及促進災後復原、加強教育宣導、提升全民災害應變能力，於民國八十三年七月二十八日行政院第二三九一次會議通過之「災害防救專案」；又於八十九年七月十九日公布「災害防救法」，將防救災體系修正為中央；直轄市、縣（市）；鄉鎮（市）三級，所囊括的災害種類包括風災、水災、震災、旱災、寒害、土石流災害、重大火災、爆炸、公用氣體與油料管線、輸電線路災害、空難、海難與陸上交通事故、毒性化學物質災害等。

民國八十四年行政院核定通過教育部所提之「土木工程防災教育中程改進計畫」，以加強土木學門有關災害防救之教育課程及內涵，並培育出更具防災、減災與緊急災害處理觀念之工程師。



Getting prepared in peacetime enables us to save ourselves as well as others.

Our people always concern themselves with disaster-related issues and the government also places the importance on disaster prevention and put in considerable manpower and financial resources. The number of research projects in technological aspect increase gradually in recent years. However, disaster prevention does not seem to keep pace with the fast transition in economic and social development, especially in the education programs to general public. Due the lack of knowledge, people will not be able to take precautions beforehand. When disasters occur, there are little guidance and consultations. All these need be eliminated in order to secure our lives and properties.

The Executive Yuan approved on July 28, 1994 □Disaster Prevention And Rescue Project□ in Council Meeting No. 2391 for the following purposes: establishing regulations and legal systems for disaster prevention and rescue, strengthening precautions to disasters, taking urgent steps for rescue and restoration, enhancing education and promotion, and improving capabilities of coping with disasters. On July 19, 2000 The Executive Yuan promulgated □Disaster Prevention Act,□ in which the disaster prevention system was amended as three levels: Central Government, Municipals/Counties, and Townships/Cities. Wind disasters, floods, seismism, drought, frigid disasters, debris flows, fire hazards, explosions, disasters of gas/oil pipelines for utilities and power transmission, air crashes, shipwrecks, land traffic accidents, and toxic chemical disasters are included in this Act.

The Executive Yuan ratified in 1995 □Intermediate Improvement Plan for Education of Disaster Prevention in Civil Engineering□ proposed by Ministry of Education in the aim of strengthening education program and contents of disaster prevention in Civil Engineering and fostering engineers with strong concepts of disaster prevention, mitigation, and handling.

民國九十年元月的第六次全國科技會議中，作成「加強推動防救災教材編訂與出版、建立推動機制等相關工作」的建議。同年五月九日行政院第二七三三次會議通過之「國家科學技術發展計畫（九十至九十三年）」，亦將該項建議列為重要實施方案。另外，八十九年十一月二十日國科會第一五〇次委員會議核定之第二期防災國家型科技計畫規劃報告中，教育部亦列為參與的主辦單位，負責推動防救災體系之評估與強化對策課題，主要工作包括：各級學校防救災教育內容課程安排之研擬、各級學校防救災教育課程執行方式之建立、各級學校防救災教育支援體系之建立。

於目前止，教育部顧問室依據第六次全國科技會議建議、國家科學技術發展計畫實施方案及第二期防災國家型科技計畫規劃報告，特詳予規劃相關工作與課題，提出白皮書，期能訂定妥善的防災教育政策，透過相關教材的編撰及教育的推廣等策略，將防災的理念深植於社會各階層，讓民眾認識台灣本土性天然災害與人為災害特性，並增加災害防治的知識，進而提升大眾防災意識與整體防災工作效能。



火災災害一般以建築火災最為常見。

The 6th National Technology Conference held during January 2001 concluded to propose the following from the government: giving impetus to the compiling, editing, and publishing of teaching materials for disaster prevention and rescue, establishing promotion mechanism. The Executive Yuan Council meeting No. 2733 held on May 9, the same year approved □National Development Scheme for Scientific Technology (2001~2004),□ in which the above proposal was included as the main focus. In addition, the Council Meeting No. 150 of National Science Council held on November 20, 2000 also included Ministry of Education as one of the auspices in their planning report of 2nd stage national disaster prevention technology projects, to be responsible for the analysis of disaster prevention and rescue system and strategy, which includes the design of education programs for disaster prevention and rescue for schools of all levels, the establishment of the execution methods, and supporting systems.

The Advisor Office of Ministry of Education is now planning the relevant jobs and issues in details and proposes this White Paper based on the recommendation made by the 6th National Science and Technology Conference, the practicing plan of national science and technology development, and the planning report of 2nd stage national disaster prevention technology projects. The aim is to set up appropriate educational policies, and to embed disaster prevention concepts deep into all social levels through the compiling of materials and education programs, in order for all people become familiar with the characteristics of disasters in Taiwan, and to have extensive knowledge in prevention and rescue. The overall efficacy will be improved by then.



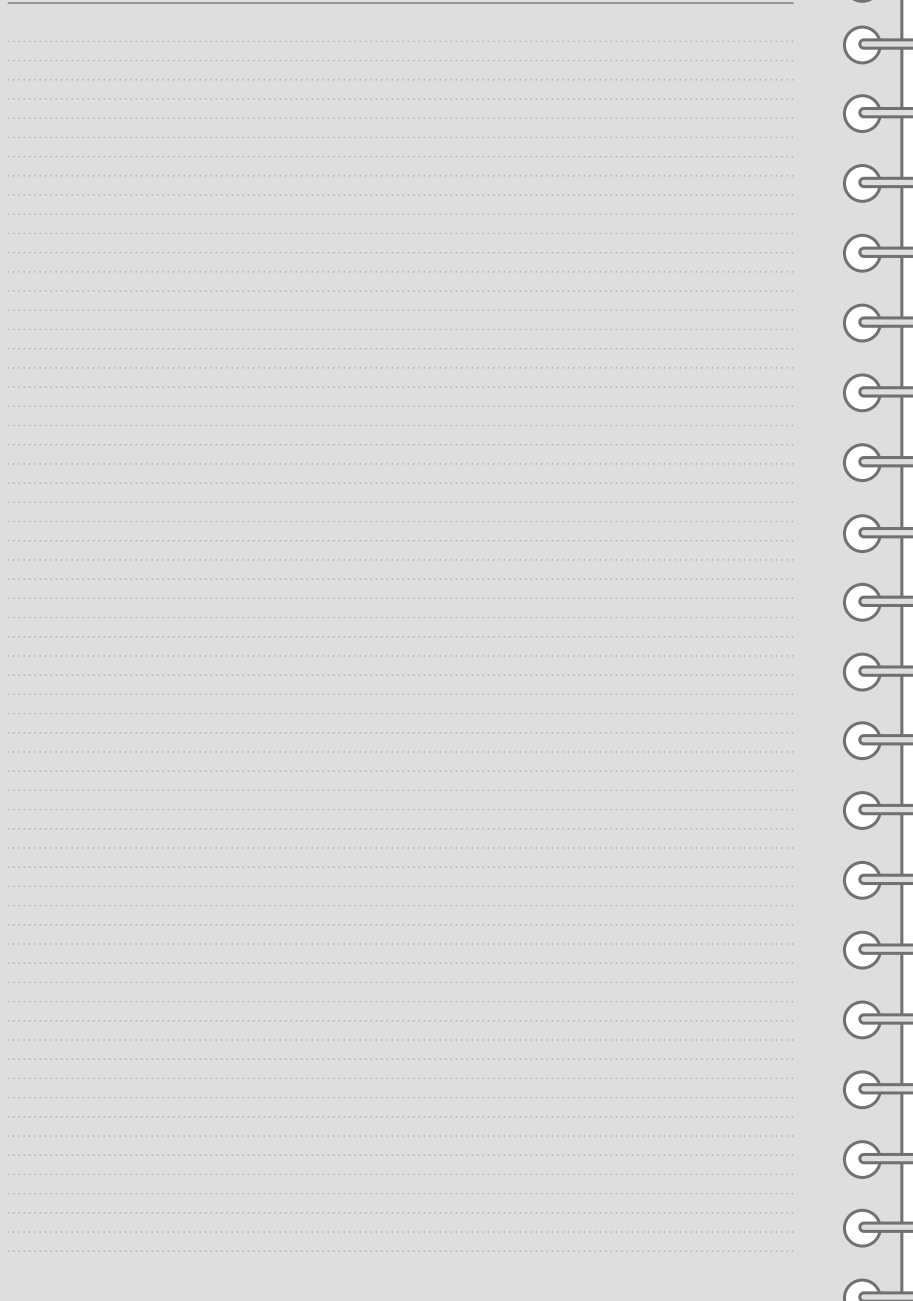
Conflagration of buildings is most common

1章

白皮書緣起

防災教育白皮書

Note



A large, spiral-bound notebook page with a 'Note' header and horizontal lines for writing. The page is oriented vertically and has a spiral binding on the right side. The lines are evenly spaced and extend across the width of the page.

第二章 Chapter 2

防災教育之理念
Concept of E.O.D.P.

防救災業務之目的在減輕人民與社會的災害風險。完善的防救災對策牽涉廣泛，且須有堅實的科技研發為基礎，但其實施與執行則有賴中央政府各部會、各級地方政府、民間團體、學校、社區及每個國民的密切協調和參與，才能發揮最大功效。因此，加強民眾對災害的認識、事前災害的預防，以及災害發生時的應變處理，為推動防救災工作之基本要務。



全民做好防災教育訓練，以發揮減災最大成效。

❖ 第一節 基本理念

學校防災教育的重點首先在於建立安全的文化與深植安全的理念，其次才是防災知識的傳播與使用。正確的理念便可避免危險的行為，災害的發生便會減少。故針對防災教育，提出四個基本理念：預防重於治療、永續發展、安全文化、零災害。內容如下：

The aim of disaster prevention and rescue is to reduce the risk of disaster to people and society. Perfect disaster prevention and rescue policies would involve extensively and shall be based on solid technological development. As for carrying out and implementation of these policies would need collaboration and participation among all departments of the central government, local government in all levels, civil organizations, schools, communities, and all citizens. Only so, policies can be carried out effectively. Therefore, instillation to the people knowledge of disaster, precautions to prevention, and capability to deal with emergency are basic tasks in promoting disaster prevention and rescue.



All citizens shall be well trained in order to mitigate disasters.



1 Impact of Disasters

In schools, the top priority of education of disaster prevention shall be establishment of safety culture and concepts, followed by dissemination and proper use of disaster prevention knowledge. Correct concepts will prevent dangerous actions, and reduce disasters of all kinds. Therefore, we propose hereunder four basic concepts of the education of disaster prevention: prevention is better than rescue, continual development, safety culture, and zero disaster. The contents are as follows:

壹

深植「預防重於治療」之觀念

災害何時會發生有時是難以預測的，可是仔細探究災害發生的原因，與人類行為、不安全的環境息息相關。故防災教育的推廣更需強調「預防重於治療」的重要性。所以未來安全工作的推動方向，著重於事前做好防範措施，因而第一步要先對災害有一定的認知，且對於環境週遭的事、物（設備、化學藥品或天然環境）可能存在的危害因子進一步的了解確認，提出改善或解決方案，並照方案規劃徹底進行；產業或校內之實驗製程設計或實驗操作等予以事先收集資料及審慎規劃，以避免疏失導致意外災害的發生，並事先瞭解天然災害資訊，採取適當之防減災策略，以減低災害之損害。

貳

防災教育導向永續發展

教育是人類特有的活動，是一種持續不斷的歷程。所以在教育推展的過程中，會朝向兩個重心發展，一個是人格行為的發展，一個是社會的進步。如果完整的防災理念藉由教育的推行，其成效可以從個人行為特質發展出來，進而帶動社會的進步與環境的改善，如此的良性循環，才能將防災教育徹底執行於社會之中，進而建構人類生存之永續發展環境。

1

Embed Concept of "Better Prevent than Rescue"

It is hard to predict when disaster will come, but after investigating reasons causing disasters, most are close related to human actions and unsafe environment. Therefore, in promoting the education of disaster prevention, we need to emphasize the importance of prevention is better than rescue. We will then need to do more about prevention in the future, and the first step is to have awareness of disaster. In addition, people need to pinpoint potential hazardous factors in their surroundings (such as equipment, chemicals or natural environment), and come up with ways of solving or preventing these disasters, and then reinforce these measures. As for experiments in the industries or schools, the procedures need to be considered and designed in advance with prevention concept. Further, gathering information about natural disasters and taking adequate prevention steps will be very helpful in mitigating disasters.

2

Leading to Continuous Education of Disaster Prevention

Education is an activity of continuous process specific to human beings. Therefore, in promoting education, focus will be, first, development of personality and behavior, and the second, social advancement. An intact disaster prevention concept can be promoted by education, and features of personal behaviors will reveal the effect. Those features will then result in social advancement and environmental improvement. This will make a positive cycle. We can only count on this positive cycle to implement the education of disaster prevention in our society and constitute an environment suitable for everlasting development of mankind.

參

建立主動積極的安全文化

世界上沒有絕對的安全，只有危險程度高低分別。唯有防災教育的主動推行，才能喚醒一般民眾的覺知，然而防災教育理念的推廣並非一蹴可幾，是持續性且永久性的工作，且防災教育的落實唯有得到全體參與者的共識與決定，才能藉著逐漸提高個人的安全警戒心，使每個人養成安全習性，達到具體、主動、積極的成效。



肆

邁向「零災害」的願景

教育是主導今日台灣民主政治、經濟發展、社會繁榮的力量。然而，災害的發生是無法避免的，再進步的科技也只能減少災害的損失，所以確實做好減災工作，以降低災害所帶來的危害，才能發揮「與風險共存」的理念。防災教育須從學校基層做起，有賴徹底執行並由校園內部推廣至產業界與整個社會，使全民皆有防災及緊急應變的常識與能力，漸漸拓展至全民化的防災教育理想，建立主動積極的安全文化，如此方能使國內災害的發生降至最低，以達到「零災害」的願景。

3 Establish Active and Vigorous Safety Culture

There is no absolute safety in the world. The difference is only in the risk levels. Actively promoting the education of disaster prevention will be the only way to awaken people's awareness of disasters. It is impossible to reach the goal in one step about promoting the concept of disaster prevention education. That needs persistence and long term efforts. Moreover, the implementation of disaster prevention education needs to get consensus and determination among all participants. Step by step people will become more and more alert to safety, and people will form good safety habits and eventually we will get concrete, active, positive effect.



4 Stride to "Zero Disaster" Goal

Education has the power to direct Taiwan's democracy, economic development, and social prosperity. However, disaster is inevitable. No matter how advanced the technology will be, the only thing we can do is to mitigate disasters. Therefore, the more we do in disaster mitigation, the less we will lose, and only in such a way, we can survive with disasters. The education of disaster prevention shall be rooted in schools. After totally implemented in schools, that can be promoted into industry and society, and all citizens will have the common sense and ability to deal with emergency. Gradually, the goal of educating all people with disaster prevention will be reached, and an active and positive safety culture can be built. Thus, the domestic disaster rate will be lowered to the lowest level and eventually reach the goal of zero disaster.

❖ 第二節 應具備之防災素養

防 災教育之目的在於提昇民眾對災害的認知，培養民眾具備良好之防災素養，以強化社會抗災能力，減輕人民與社會的災害風險。在通盤檢討防救災之觀念、認知與相關工作需要後，各教育階段學生與社會大眾應具備的防災素養。

壹

中（含國中、高中）小學生具備之防災素養

中（含國中、高中）小學生防災教育之目的，在於培養學生良好習慣，使之具備基本防災素養，詳如附錄表一。希望藉由從小的學校教育，提昇國民對災害的認識，與了解災前準備和緊急應變的重要，且能夠在災害發生時，選擇即時合宜的應變措施來減輕可能的災害和保護自身安全。因此，學生須要對台灣區域性的天然災害，或所處環境可能潛在之人為災害有所認識，知道防範、減低及因應災害的方法與技能，更重要的是要培養學生面對災害防治的正確態度與覺知，以及提供防災演習來提高學生面對災害發生時的應變能力。



2

Capabilities Required in Disaster Prevention

The objective of education of disaster prevention is to enhance people's knowledge of disaster and to cultivate people's good habits on disaster prevention in order to reinforce society's ability in dealing with disasters and eliminate the risk of disasters for people and society. After examining concepts, knowledge, and needs related to disaster prevention and rescue, disaster prevention knowledge shall be obtained by students of different levels and ordinary people.

1

Capabilities Required for Junior/Senior High Students

The aim of disaster prevention in junior and senior high schools is to cultivate good habits of students and to equip them with basic disaster prevention knowledge, as shown in Table 1 attached. It is hoped that school education is capable of enhancing people's knowledge of disasters, understanding disaster prevention, and the importance of how to deal with emergency. Therefore, while there is a disaster, people know the right thing to do to mitigate disaster loss and to keep oneself safe. In this regard, students shall get to know what kind of disaster happens to Taiwan most often, what are the potential man-made disasters, and learn how to prevent, mitigate, and cope with those disasters. Most importantly, students need to have proper attitude and become conscious of disasters, and attend prevention maneuvers, in order to be competent in disaster prevention.

貳

大專學生應具備之防災素養

大專防災教育之目的，在於培養學生可以協助執行防救災實務工作與專業技能，詳如附錄表二。希望能藉由學校教育之實施，讓學生充分瞭解天然災害的種類、原因及可能造成之損失與衝擊、天然災害之地區災害特性、平時減災預防工作的重要性與內容、人為開發對環境與抗災能力造成的影響、災害潛勢圖的意義與應用方式、各階段防救災工作要項等事項。在災害事件發生時能夠自救並能助人，適時加入防救災體系協助學校或社區進行防救災工作，配合學校或社區於災害發生時的應變計畫，以專業技能協助推動災害防救工作。

參

社會與成人應具備之防災素養

社會與成人防災教育之目的，在於建立正確之觀念與態度，以及推動相關工作之能力，詳如附錄表三。希望能藉由教育宣導，讓民眾能確實瞭解災害的種類、原因及可能造成之危險與影響、地區災害特性、保護自身安全應具備的應變措施、減輕災害所帶來的損失和預防方法、災害發生前後可以尋求資訊與支援的方式、因應災害之逃生路線與避難地點等事項。在災害事件發生時能保護自身安全，並協助家人及鄰居進行應變與避難。平時則以正向態度面對災害的發生，具備進行災害預防工作的認知，瞭解社區與鄉鎮市區級防災體系運作狀況，以積極態度參與社區防災活動，進行社區防災之規劃及擬訂災害防救計畫。

2 Capabilities Required for College Students

The aim of education of disaster prevention for college students is to cultivate student's ability to help performing disaster prevention works and professional skills, as shown in Table 2 attached. We hope the education at school can help students to learn various kinds of disasters, causes, possible impacts, properties of regional disasters, importance and contents of disaster mitigation works in daily life, the impact of man-made development on environment and ability to mitigate disasters, the ability to decipher the meaning in disaster potential diagrams and their applications, and disaster prevention and rescue works in different stages. Once disasters happen, students need to have the ability to keep themselves safe and be able to help others, to join school or community disaster rescue work, to cooperate with school or community in dealing with emergency, and professionally help with disaster prevention and rescue.

3 Capabilities Required for Society and Adults

The aim of disaster prevention and rescue for society and adults is to establish proper attitudes, concepts, and capabilities to promote related tasks, as shown in Table 3 attached. Through educational promotions, it is anticipated that ordinary people will gain knowledge of disaster categories, causes, possible hazards/impacts, characteristics of regional disasters, countermeasures to extricate from emergency, ways of prevention disasters and alleviating losses, sources of information and assistance before and after disaster, the route to flee and locations of shelters. When disasters come, people shall be able to protect themselves and help families and neighbors to take refuge. We need to have positive attitude toward disasters, awareness of disaster prevention, understanding of disaster prevention system within community and township level. Further, people need to be actively involved in community disaster prevention activities, and participate in designing community disaster prevention scheme.

第三章 Chapter 3

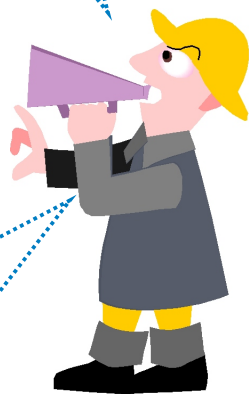
防災教育發展之現況
Current Situation

❖ 第一節 國際防災教育概況

天然災害幾乎是每個國家都有的問題，在防治計畫上則因國情的不同而異，在此分析國外防災教育政策及現況時，特別選擇先進國家的發展概況進行解析。

在美國的防災教育行之有年，多以地區性的方式來推動，而且組織間彼此分工合作，致力於訊息傳達的一致，避免造成民眾認知上的紊亂反而收到反效果。整體而言，美國的大眾防災教育的重點在於：災害覺知、社群融入、事前準備、技術資訊提供及緊急應變計畫。而在學學生之防災教育則以學校為單位，有政府教育部門、學術研究單位及其他相關緊急應變組織來協助規劃。從相關報告中可知，「前置準備」與「災難應變」均是美國各州最重要的提倡點，而防災教育訓練更是集中於學校行政人員及教師身上。美國更設有包含人為及天然災害所造成的緊急災難管理等相關研究系所，以鼓勵與培訓防救災專門人才。

在學校防災教育方面，從可獲得的資料來看，日本與美國相似，都將「事前準備」(Preparedness) 與「應變措施」(Reactions) 置於最重要的教育點。日本2000年度的教育白皮書中對「充實防災對策」一章的基本方針為：確保各級學校學生之生命及身體安全、確保教育研究活動之實施、文教設施及相關設備之防護、防災相關科學研究之活動、災民救援活動相關措施之推動。





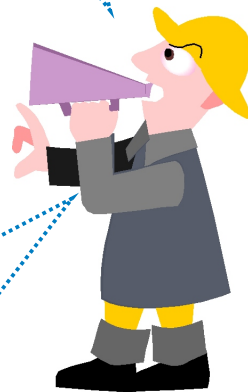
1

Profile of Overseas E.O.D.P.

Natural disaster bothers every country in the world, the prevention and cure scheme is very different in accordance with different countries. Therefore, we will take those most advanced countries as reference first.

In the U.S., they have been promoting the education of disaster prevention for years and mostly are held as regional activities. But those divided organizations cooperate with each other in order to give out messages with consistency and avoid negative effects, which may result in cognitive confusion. Overall, the focal points of the U.S. public education of disaster prevention are: disaster consciousness, community blending, pre-event readiness, technology give-out, institutions and emergency related divisions providing help in designing scheme. As for the education of disaster prevention for students at schools shall be based on each school, which functions an education unit. The planning shall be assisted by government agencies, and academic research as well as other related emergency organizations. As information got from related reports, "pre-event preparation" and "emergency measures" are advocated by all states. The education of disaster prevention training is loaded on the shoulders of administration staff and teachers. In addition, there are university departments and institutes for emergency administration focused on man-made and natural disasters, which encourages training and cultivating professional disaster prevention staff.

As for education of disaster prevention in schools, Japan and the U.S. are similar in placing "Preparedness" and "Reactions" as the most important objects. Japan Education White Paper, published in the year of 2000, in the section of "Disaster prevention substantial scheme", they put the following as their essential focal points: assure students life and body safety, assure education research in practicing, educational facility and related equipment are in protection, disaster prevention related science study, and promote victim rescue related activities.





英國為配合聯合國政策，亦進行了教育改革，將防災教育融入新的課程標準中，其中除針對天然災害事件的物理特性進行分析外，亦補強了「人」的面向。而澳洲政府亦在聯合國的支持下，發展了輔助學校防災教育的策略，策略目標在於融入災害效應與防災訊息於學校課程，而最終目的是希望透過學校系統，提昇社區對災害防治與事前準備的覺知與教育。

聯合國的國際天然災害防治組織，IDNDR (International Decade for Natural Disaster Reduction)，在各會員國的主要工作目標是：協助災害認定、落實災害防治計畫、及建立區域和災害預測系統；在教育方面則倡導「學校災害防治文化」，希望藉由學校教育，提昇民眾對天然災害的認識，與了解災前準備和緊急應變的重要。



In order to relate to the policy announced by the U.N., England has gone on an educational reform and put disaster prevention into their new curriculum criteria. In the criteria, they not only put emphasis on the physical aspects of natural disaster, but also put emphasis on "human" aspect. Australian government with the help from the U.N. has developed policy to assist school on education of disaster prevention. Their aim is to blend disaster effect with disaster prevention information in school curriculum. Finally, they hope that with the help of school education system, communities will have better disaster prevention awareness and education.

All the members in the IDNDR (International Decade for Natural Disaster Reduction) have the same goals to achieve the followings: assist identification of disaster, implement disaster prevention scheme, and build up regional and disaster alarm system. In educational aspect, they advocate "Disaster prevention culture in school". They hope that through the help of school education, people will learn more about natural disasters, preparedness and reactions.

❖ 第二節 我國防災教育概況

為 落實天然和人為災害預防與緊急應變，防災必須與教育結合；在推行時，首先必須要取得眾人對於防災教育的共識以及學校主管、實驗室負責人對執行防災教育的決心與承諾，接著是教育及學術單位應整合現有學校課程、教育等，將現今防災知識以融入方式加入現有的課程，並透過專業的師資培訓，於各級學校建立種子教師，以執行防災教育的知識推廣與宣傳活動。但比較先進國家與國內防災教育之需求，可歸納下列我國防災教育亟待改進之現況：

壹

國人對災害的認識不清，危機意識薄弱

分 析國內諸多天然和人為災害案例，不難發現國人普遍缺乏危機意識，或漠視環境生活週遭中可能潛在危險因子，再加上缺乏防災觀念及緊急應變逃生演練，一旦災害發生，往往釀成重大悲劇。所以解決之道，則是國人應加強災害的防災觀念，將其運用在生活當中，並且從以往災害中學習經驗，避免災害重複發生。





2

Profile of Domestic E.O.D.P..

In order to implement natural and man-made disaster prevention and reactions, disaster prevention should combine with education. In the process of promotion, first we need to get people's consensus on the education of disaster prevention, then the commitment and determination from school administrative staff and laboratory responsible person are also important. Therefore, education and research divisions need to come up with a school curriculum, which has put in the knowledge of disaster prevention. With the professional teacher training courses, seeded teachers are spread in schools to implement and promote education of disaster prevention. In comparison with those advanced countries and our country, the needs for improvement in education of disaster prevention are as follows:

1

Unawareness of Disasters, Frail Sense of Crisis for Compatriots

Analysis those natural and man-made disasters in our country, it is not difficult to find that people in general are a lack of disaster awareness, or they overlook those potential risk factors existing in their environment. Moreover, owing to lacking practice of the disaster prevention concepts and reactions, whenever there are disasters, there are tragedies. The only way to solve this situation is to reinforce the concept of disaster prevention, and practice in everyday life. Above all, learn from experience and not to let tragedies repeat again.



貳

較少有系統的防災教育課程規劃

防災教育策略施行上，若缺乏有系統的防災教育課程規劃會嚴重影響防災教育推廣的成效；國內大專院校大都只有部份理工學院等科系有開設工業安全、土木工程防災等相關課程，非理工科系則只有少數有開設工安等課程，這也是大專院校無法將防災理念深度推廣的原因之一。

參

缺乏具有防災專業知識的師資

防災教育要在學校中推行，必需要有對防災教育有全盤性了解的專業教師，來進行教育傳承的工作，但是目前國內並無負責防災教育專業師資培訓的單位，所以至今校園內部的防災教育是直接由專任老師進行，可是因為老師往往在認知程度上的不同或缺乏共識及推廣熱誠，使得國內各學校防災教育之推廣成效不彰。

肆

較少有系統的資料庫管理及架設災害專屬網站

由於近年來災害發生頻傳，報章雜誌、網路、書籍刊物等，有越來越多相關於防災的資訊，但國內較少有整合性資料庫管理系統，使得這些資料無法整合管理、查詢，民眾只能由單一災害類別個別蒐集、查閱。而且缺乏整合性災害專屬網站，致無法提供民眾第一手的災害資訊，亦無法做完整的災害網站連結等，故建立整合性資料庫管理及架設災害資訊專屬網站，為未來防災教育努力的方向之一。

2 Few Systematic Courses for Disaster Prevention

The implementation of disaster prevention policy need to have a systematic curricular plan or the effect of promotion disaster prevention education will be deeply affected. In our country, there is only very few course about industry safety in some science and engineering departments not to mention those departments which do not belong to this field. That no wonder we have encounter difficulty to promote disaster prevention in colleges.

3 Lack of Teachers with Professional Background

As for promoting education of disaster prevention in schools, we need to have professional teachers first. However, there is no such an organization which responsible for training professional teachers in this field. Most of these courses in school are performed by school teachers, but different teachers have very different viewpoint concerning this subject. In addition, some teachers may lack enthusiasm to promote, therefore, our education of disaster prevention in schools are not very fruitful.

4 Few Systematic Data Control and Specific Web site

Frequent disasters have been reported recently, and there are more related information about disaster prevention in press, such as, newspaper, internet, books and magazines. Owing to the fact that we do not have data base management system so those information has not been organized and people can only look for a single kind of disaster at one time. Moreover, there is no organized internet page so it is difficult to give people the first hand information, not to mention a complete disaster network. In the future, set up data base management system and an exclusive internet page will meet the most urgent needs.

第四章 Chapter 4

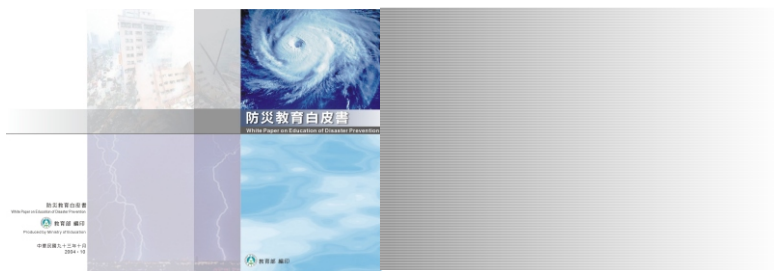
我國防災教育問題分析

Analysis of Domestic Education of
Disaster Prevention

綜合檢視我國防災教育發展與現況，可歸納出在政策、行政權責、課程與教材、師資培育、社會教育、資源整合及心理重建等方面之問題：

壹 整合政策

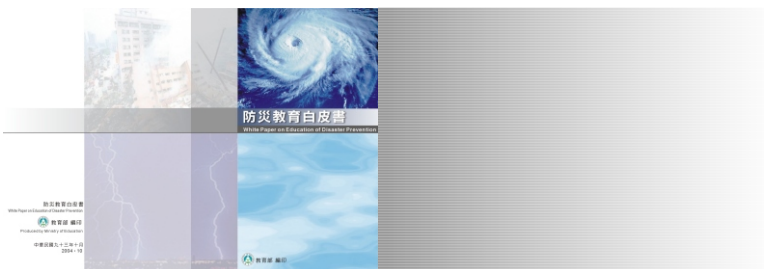
從國外的經驗來看，防災教育著重的是系統性的規劃與具體行動的實踐，所以許多國家在政策上除了鼓勵災害防治研究外，防災基本社群的建立與社群之合作，進而建立與政府防災指揮機構溝通聯繫的管道、鼓勵私人企業投入防災系統的建立，到國際防災合作等，都有明確的計畫，而這些正是台灣的防災教育缺乏的系統性規劃。在沒有全國且系統性的防災教育規劃之情況下，防災教育最多只能流通於個別的中小學，且校際間鮮少交流，與大眾的防災教育更難以連成一氣，這樣一來，遑論災害來臨時能產生從上到下全面的有效應變；而缺乏國際防災訊息與資源合作，更會讓國內的防災教育流於片面與地方性質，防災知識的更新與發展腳步也跟著變慢，這實在是政策制定者應深思的一點。



In a comprehensive analysis of domestic education of disaster prevention, we can conclude issues in the following aspects: policy, administrative authority, courses and materials, teacher qualification, social education, integration of resources, and psycho-rehabilitation:

1 Policy Integration

Judging from experiences overseas, the focus of disaster prevention is on systematic planning and concrete actions in practice. Therefore, many countries made policies of encouraging research on disaster prevention, establishing and collaborating basic units to tackle disasters. Next will be setting up communication channels with government commanding institutions, encouraging private investment in the establishment of prevention systems, and leading to international cooperation. All the above are covered by definite schemes. However, such systematic planning is exactly what is missing in Taiwan. Due to lack of systematic planning, education of disaster prevention is within individual junior or elementary schools. There is no interaction among schools, not to mention the connection with public education. As a result, whenever disaster comes there is no effective and overall countermeasure. The lack of international cooperation in information and resources makes domestic education confined in regional level, and hinder the update of knowledge as well as development pace. This is what policy makers shall ponder.



貳 行政權責

防災教育權責是中央與地方各政府部門等本諸法規職掌各自推動實施，且將防災教育分成專業教育及民眾教育兩種，前者法令清晰完整，後者因各部會經費編列關係，以宣導施政績效為主，投入到防災教育的宣導經費，相對地減少許多。在大學部份，建置有許多和災害相關網頁，但卻偏重在學術性的介紹，真正落實在教育上的並不多，目前除了專業系所相關課程之外，每年僅約2%的學校開設防災領域通識教育，且課程內容大多只針對單一類型災害進行介紹，顯少涉及其他類型災害。而中小學校在教育部及教育局要求之下，許多學校均有防災教育及防災應變計畫，但真正能實施演練或宣導的學校也不多。

**參** 課程與教材

我國防災教育目前能真正落實者，主要為各高中、國中、國小課本中呈現學生必須修讀的內容。但這些內容主要只注意防災及災害知識之部分，而較缺乏防災態度、防災技能、心理建設及人文關懷方面的教育，也非常缺乏實質的定期操作演練規劃，另對人為災害的相關教育也甚少提及。

2 Administrative Authority

Authorities of education of disaster prevention include different departments and agencies in central and local government, all of which shall implement and enforce according to the law. If education of disaster prevention is split into professional education and public education, there are clear and complete ordinances for the professionals. The latter, due to the budget, is mainly on the propaganda of achievements. The budget actually goes for education is comparatively much less. As for universities, there are many web pages related to disasters; however, the emphases are on scientific research rather than education. Except for courses delivered in professional departments and institutes, only about 2% of universities deliver general knowledge courses in the field of disaster prevention, and the curriculum is limited to a single type of disaster only. Few involve various types of disasters. Junior and elementary schools are required by the authority to prepare plans for education and prevention, but few will put into maneuver and promotion.



3 Curriculum and Materials

Obligatory courses delivered in high/junior/elementary schools are what domestic education actually put into effect. But contents focus on disaster prevention and disaster knowledge. There is little involvement in the attitudes, skills, and psychological and human care aspects, and there is no periodical exercise and maneuver. There is little involvement in man-made disasters, either.

肆 師資培育

在 高度仰賴學校作為防災傳播管道的現在，對於防災教育師資的培育卻缺乏整體性的規劃。雖然相關單位與公共部門會製作防災教育相關之手冊、錄影帶，但由於其設計之初，並未從整體防災教育的角度出發，過於零散的教育資源，往往只成為教學上的配角，不但未能發揮其教育及教學效果，且更容易造成資源的重複浪費。此外，在整體課程的規劃上，防災教育經常僅是某教學科目的一個單元，而擔任教學工作的教師，往往也難以在繁重的課業負擔下，另行抽出時間進行教材的蒐集與整理，這也易使國內的防災教育流於形式。

伍 社會教育

目 前國內防災教育的對象，係以各級學校學生為主，對於社會大眾、學校教師、行政人員、媒體從業人員等之教育頗為缺乏。事實上，成人在災害過程中所面臨的衝擊及事後的心理創傷，很難在現有的社會資源中獲得學習的機會與管道，也不知如何去尋求協助。此外，隨著傳播媒介的多樣化，不但提高了訊息傳播的速度，同時成為現代人知識建構的主要管道之一，但是訊息流通的快速，並不同時確保訊息的正確性，錯誤的訊息與觀念也可能在高速的訊息流動過程中傳播、強化。

另外，媒體對於災害的過度渲染，未必能激起閱聽者警覺性，反而也可能因訊息過多而產生「麻痺」的效果。而民眾對於政府的高度信任，也常導致對環境的錯誤認知，例如看到加高的堤防或擋土牆，民眾往往以為政府做了越多的安全措施，就表示該處就越安全，殊不知這也反映出此環境所具有的危險性。

4 Teacher Qualification

Even though disaster prevention currently relies highly on schools as propagation channels, there is no integral planning in teacher qualification. Although relevant organizations and the public sector will produce booklets and videotapes of disaster prevention, they are not designed from an overall point of view. As a result, such scattered resources become subordinate roles in education and eventually become waste without functions and efficacy. In addition, in the overall planning, disaster prevention is only a unit of some other courses, and teachers usually do not have enough time to prepare specifically, which makes domestic education of disaster prevention a formality.

5 Social Education

Objects of domestic education of disaster prevention are students of all levels. Ordinary people, teachers, executives, and medium workers, etc. seldom receive such education. In fact, it is difficult for adults to find opportunities and channels to learn and to seek assistance from existing social resources in order to overcome the impact as well as the psycho trauma on them when they go through disasters. Furthermore, as media diversify, the speed of communication becomes higher. Media have also become major channels for modern people to acquire knowledge; however, the fast circulation of information does not guarantee the accuracy. False information and concept can also be transmitted in high speed.

In addition, media may sometimes exaggerate disasters, which may not necessarily arouse people's alertness, on the contrary, too much information will □paralyze□ the audience. And then, the confidence people have in government usually lead to a wrong understanding of the situation. For example, when people see embankment being elevated they may reckon that since government has constructed more safety measures there, that will become a more secured site. But on the other hand, this reveals the potential danger hidden there.

陸 資源整合

在 教育資源有限的狀況下，如何善用既有的社會資源，將是為國內防災教育解困的一個重要出路。事實上，在許多政府部門及專業團體都握有一些防災相關資源，但各部門間卻各自獨立，缺乏橫向的連結。一旦發生災害，民眾根本不知道該向哪個單位求援。而防災教育所涉及之建築結構、環境評估等較複雜的專業知識，也應善用現在的專業技師團體協助與支援防災教育的工作。

柒 心理重建

目 前防災教育的重心偏重於災前的預防與災時緊急應變階段，對於災後的重建工作，尤其是心理方面的調適與復建等較少著墨，也使得大眾忽略了心理重建的重要性，但國外心理學上的相關研究已顯示這些看不見的傷，其所造成的影響遠比看得見的物理性創傷更為深遠。因此對於心理創傷的輕忽，將會成為大型災害發生後的長期隱憂。



6 Integration of Resources

Under the condition that educational resources are limited, how to make better use of existing resources will be an important way out for the predicament of domestic education of disaster prevention. In fact, each of the many government agencies and specialized groups possesses prevention resources of some sort, but each acts by itself and does not establish lateral contact. Once disaster hits, people do not know which agency they should appeal to. Complex professional knowledge as architecture structure and environment analysis, which involves education of disaster prevention shall seek for assistance and support from professional engineer groups.

7 Psycho-rehabilitation

Current education of disaster prevention has laid particular stress on prevention before and countermeasures during disasters. As for reconstruction after disasters, especially psycho-recuperation and rehabilitation, is seldom elaborated, which veils the importance of psycho-rehabilitation. However, foreign studies already show that impact from such unseen trauma may be even more serious than that of physical injuries. Therefore, negligence of psycho trauma will eventually become a secret worry of catastrophes.



第五章 Chapter 5

防災教育推動策略
Strategy for E.O.D.P. Promotion

防災教育之目的在於提昇民眾對災害的認識，與了解災前準備和緊急應變的重要，培養民眾具備良好之防災素養，以強化社會抗災能力，減輕人民和社會的災害風險。

壹

妥善規劃執行防災教育計畫

針對台灣常見或潛在性高的本土性災害作為重點課題以「整合防災教育資源，建立良好學習環境，強化社會抗災能力」為目標，妥善規劃整合性防災教育計畫。為讓民眾瞭解台灣本土性的災害及增加災害防治的知識，進而達到防範於未然之功效，可透過：

- 一 強化災害防救教育之觀念與認知。
- 二 擴展災害防救教育之學習管道與課程。
- 三 強化災害防救教育相關設施。
- 四 培訓災害防救教育推廣之專業人才與團隊。
- 五 累積充實災害防救教育與知識。
- 六 結合學校社會與政府相關部門之資源與活動。

The main purpose for education of disaster prevention is to enhance people's awareness of disasters, realize the importance of preparedness and reactions, cultivate people to have good disaster prevention capacity, to reinforce the society's ability in defending disasters, and to reduce the disaster

1

Well-arranged implementing disaster prevention education scheme

Pinpoint common or potentially existing disasters as the main courses. Put the following as the main objects: "Integrate available resources for education of disaster prevention; build up better learning environment; reinforce the society's ability in defending disasters." In order to let people to understand Taiwan's original disasters, increase their knowledge about disaster prevention, and to achieve the goal of prevention in advance, we can do as follows:

1. Reinforce the cognition and concept for education of disaster prevention and rescue.
2. Broaden the learning channels and courses for education of disaster prevention and rescue.
3. Reinforce education of disaster prevention and rescue related facilities.
4. Cultivate education of disaster prevention and rescue professional staff and teams.
5. Accumulate disaster prevention and rescue education and knowledge.
6. Combine the resources and activities in schools, societies and government agencies.

貳

強化防災教育推動機制與設施

- 一 由防災教育權責單位，共同研商建立防災教育推動之協調作業與追蹤評鑑機制。
- 二 持續嚴謹運作，務實推動防災教育，提升國民之防災素養。
- 三 規劃建置防災教育資源中心、教育網站與知識庫，強化防災教育相關設施。
- 四 擴展學習管道，提高學習效能，累積相關工作成果與經驗。

參

充實防災教育課程與教材

- 一 參考國外經驗，配合本土災害經驗，考慮地區與族群特性、教育對象，規劃適當且實用之課程與學習方法。
- 二 將災害成因、災害特性以及減災、整備、應變、復建各階段防救災工作要項等內容，納入相關教材，於教育過程中提昇民眾對防災的體認。

肆

加強師資與專業人才之培訓

- 一 妥善研擬針對不同程度、各種學習方法所需之防災教育師資與專業人才培訓計畫。
- 二 培育種子講授人才，進而施行推廣教育，使防災教育之師資與專業人才的數量能夠合理成長。
- 三 持續充實師資和專業人才相關知能，進而對中小學學生、大專校院學生、社會大眾等不同對象，可運用適宜之方法，引導學員充分瞭解災害特性、相關因應措施。

2

Reinforce the promotion mechanism and facilities for education of disaster prevention

1. Authorized division for education of disaster prevention is responsible for setting up coordination and follow-up assessment mechanism.
2. Continue to carefully perform, promote education of disaster prevention concretely, and enhance people's disaster prevention capacity.
3. Plan to set up education of disaster prevention resources center, education network and knowledge center, reinforce related facilities for education of disaster prevention.
4. Broaden the learning channels, enhance learning effectiveness, and accumulate related results and experience.

3

Substantial courses and materials for education of disaster prevention

1. To take foreign experience as reference, to incorporate with local disaster experience and to consider regional and national properties and students variations, then plan a suitable and practical course and learning method.
2. The contents for causes of disasters, disaster features, disaster mitigation, preparedness, reactions, recovery, and main tasks for different stage of disaster prevention and rescue should be put into related teaching material. So that through education, we can enhance the awareness of people toward disaster prevention.

4

Reinforce the cultivation of qualified teachers and professionals

1. Set up a substantial training scheme for qualified teachers and professionals according to different levels and different learning methods.
2. Cultivate seeded instructors to give lectures on promotion disaster prevention education in order to increase the number of qualified teachers and professional in this field.
3. Continuously renew teachers and professionals with update information, therefore, we can use proper method to guide students, include elementary and college students, and ordinary people to understand the features of disaster and how to take proper measures.

伍 強化成人及社會教育

- 一 考量地域與社群之特性及程度，進行成人及社會防災教育之課程規劃。
- 二 設計實用教材，強化各項教學支援設施，利用網際網路擴充學習管道。
- 三 結合社區大學教育、防災社區推廣計畫，強化災害防救觀念與認知。
- 四 加強媒體從業人員之防災教育，使傳播人員對災害具備良好的認知。

陸 結合資源落實應用

- 一 結合學校、民間團體與社區力量，進行防災教育之整體規劃，共同推動防災教育。
- 二 以家庭為單位、以小孩為訴求，推動社區民眾親自參與防災教育學習活動。
- 三 結合政府相關部門之研究與教育資源，規劃災害防災教育推動與評鑑體制。
- 四 鼓勵社區、學校、民間團體、政府單位共同規劃推動防災教育，落實推廣防災工作。

柒 推廣防災教育理念

- 一 研擬良好防災教育政策。
- 二 嚴謹規劃防災教育課程。
- 三 落實學校安全衛生策略。

5

Reinforce education for adults and society

1. Consider varying levels of regions and communities in design courses for educating adults and societies concerning disaster prevention.
2. Design practicable teaching materials, reinforce teaching supplementary facilities, and utilize internet to broaden learning channels.
3. Combine community college with community promotion plan of disaster prevention to reinforce the concept and cognition of disaster prevention.
4. Strengthen mass media workers' education of disaster prevention, and to let those workers have better knowledge about disasters.

6

Combine resources and application

1. Combine power of schools, private organizations with communities, and design education of disaster prevention as a whole to promote the education collaboratively.
2. Take families as units and focus on children to promote community education of disaster prevention.
3. Combine the research results from government divisions with teaching resources to plan an education of disaster prevention promotion and assessment system.
4. Encourage communities, schools, private organizations, and government divisions to promote education of disaster prevention collaboratively in order to fulfil disaster prevention tasks.

7

Promote the concept for education of disaster prevention

- Plan good policy for education of disaster prevention
- Earnest design courses for education of disaster prevention
- Set up practicable safety and sanitation strategy

捌

防災教育與產業活動並行

- 一 配合產業界的轉變與成長，防災教育的內容、課程規劃，及其他配套措施等，需進行通盤的規劃，做適度的調整。
- 二 加強與產業之間的互動，使產業界的災害發生率能有效的降低，進而帶動產業升級，使社會經濟繁榮。
- 三 在學校中設立相關防災教育課程，並開設成人防災教育課程，增加進修管道，讓已就業者也有學習的機會。

玖

學術單位與產業徹底落實相關法規規定

- 一 設計學校及產業有效的防災安全管理系統。
- 二 周詳規劃防災教育政策。
- 三 符合法令的精神與規範。
- 四 落實法規規範於產業現況。



8 Combined education of disaster prevention with industry activity

1. In accordance with industry transition and growth, the contents, program, and related measures for education of disaster prevention should be reconsidered and made accommodation accordingly.
2. Enhance the interaction among industries to effectively decrease the rate of disaster, to help industries upgrade, and to increase the society economic prosperous.
3. Set up disaster prevention related courses in schools, offer courses for adults, broaden the channels for learning, and let working people have the opportunity to learn.

9 Academic department and industry faithfully practice regulations

1. Design an effective disaster prevention safety management system for schools and industry.
 2. Comprehensively design a policy for education of disaster prevention.
 3. In compliance with the spirit of law and regulations.
- 四 Regulations can be implemented in industries.



拾

加強政府與民間的防災教育活動

防災教育為防災工作的基石，所以政府推動的防災政策是必須以現階段防災教育推行策略為基準，所以必須加強政府與民間防災之互動，有利於政府了解一般民眾、學校及產業之需求，使防災教育之推廣更上一層樓。

拾壹

促進防救災研究之國際交流及學術合作

- 一 朝著國際合作交流的方向邁進。
- 二 參考國外防災教育推行之效率及成果。
- 三 促進防救災研究之國際交流及學術合作。
- 四 派遣國內專家出國考察及受訓。
- 五 達國際化標準的防災教育水準。

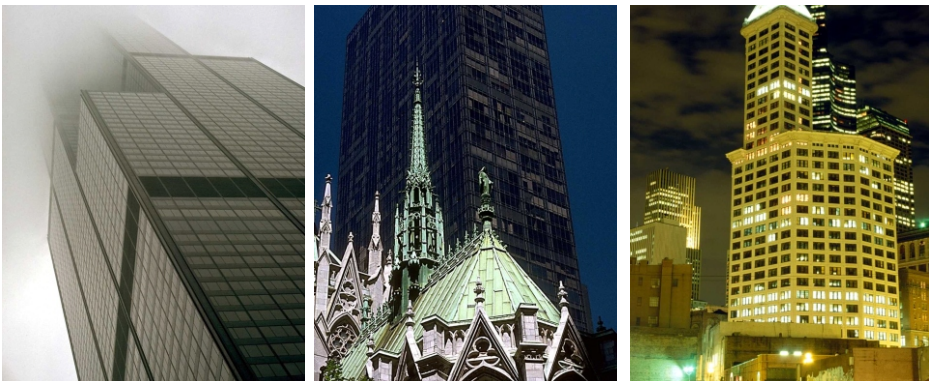


10 Reinforce the activities for education of disaster prevention and rescue held by government and private organizations.

Education of disaster prevention and rescue is the stepstone of disaster prevention. Therefore, disaster prevention policy of government should take the current education of disaster prevention strategy as their standard. To increase the interaction between government and private organization and to let government know about the real needs in general people, schools and industries will help to push the promotion for education of disaster prevention a step forward.

11 Promote international research and academic cooperation in disaster prevention and rescue

1. Stride toward international cooperation and interaction
2. Take other countries' effectiveness and results of promoting disaster prevention process as reference.
3. To promote international research and academic cooperation in disaster prevention and rescue.
4. Dispatch local professionals to make an international investigation and to train in other countries.
5. Reach international standard for education of disaster prevention and rescue.



Note

Blank lined area for notes, resembling a spiral notebook page.

第六章 Chapter 6

未來展望
Future Outlook

綜 合國內外的防災教育經驗可知，防災教育之最終目的為：建立防災系統，進而維護生命產財安全。所以，對災害知識層面之認識與具體行動的實踐，應同時並重。考量防災教育之發展與現況，以及防救災工作推展需求，中小學教育、大專教育及社會成人教育之防災教育展望分別如下：

壹 中、小學教育

藉 由融入課程方式，培養中、小學生對天然災害與防治的正確知識、技能與態度覺知。再進一步將防災教育列為中、小學專門基礎課程，使國小至高中每個年級均有「防災教育」的專門課程可列為選修或必修。使防災教育的學習更為系統化和精緻化，以完整的教學時數安排，透過專業教師進行有系統的教學設計與引導，藉此提昇全民之「防災素養」。



Integrating the experiences from domestic and international education of disaster prevention, we can conclude that the final goal for education of disaster prevention is as follows:

Building up a system for disaster prevention can keep our lives and properties safe. In this case, to accumulate knowledge about disaster and to fulfil what we learn are equally important. Considering the development and current situation for education of disaster prevention, and the necessity for promotion of disaster prevention and rescue, we conclude the perspectives of education for disaster prevention and rescue in elementary and high schools, colleges, and adults as follows:

1

Education for Junior and Elementary Schools

Using integrated curriculum, we will teach elementary and high school students correct knowledge, skills and awareness about natural disasters and their prevention measures. Then we will put a series education of disaster prevention as the basic course for elementary and high schools, and finally every grade in elementary and high schools will have "education of disaster prevention" as their obligatory or optional courses. This can make education of disaster prevention more systematic and refined. Moreover, we will provide complete course and qualified teachers using systematic course design and guidance to enhance people's "disaster prevention capacity".



貳 大專教育

在大專教育方面，希望學生能充分瞭解災害特性、平時與災時之防救災工作要項，並整合學校、社會與政府相關部門之災害防救教育資源，使防救災體系及實際工作能與學校教育結合。同時，強化防災教育經驗交流與師資培訓，使防災教育相關人員能夠持續充實與成長，並有效累積防救災知識與經驗，為防災教育與相關工作推廣奠定良好基礎。可考量將防災教育課程納入大學通識教育中，以落實防災教育，強化大專學生防災素養。

參 社會與成人教育

在社會與成人教育方面，希能透過平時積極參加地區防災訓練，亦可利用社區大學，由專業教師巡迴任教，使民眾充分理解災害發生之原因、過程與歷史性大規模災害，以提升防災意識與認知，並瞭解地區災害防救體系之運作狀況。藉由平時災害防救對策之具體執行與落實，建立災害應變能力，在災害發生時，能以家庭或社區為中心，迅速判斷與正確因應，確保自身安全，並協助家人及社區鄰居保護生命財產安全。



2 College education

In the aspect of college education, we hope that students can fully understand the features of disasters, the main tasks during everyday life and disasters. Moreover, we need to integrate resources from schools, society, and government in order to combine disaster prevention and rescue system with practical tasks and school education. At the same time, to reinforce the education of disaster prevention experience and training courses for qualified teachers are essential to keep related personnel enriching their knowledge and to accumulate experiences and knowledge of disaster prevention and rescue. Following these steps, we believe that we can build up strong foundation for education of disaster prevention and rescue. Also, it is worthwhile to consider to include the education of disaster prevention and rescue in college general courses in view of fulfilling the education of disaster prevention and reinforcing college students' disaster prevention capacity.

3 Social and Adult Education

As for the social and adult education, we hope that we can spread the knowledge about the causes of disasters, their processes and historically important disasters through actively participating in disaster training held in community college or circuit lectures given by professional teachers. In this case, people will have better awareness and cognition about disasters and learn more about the regional disaster prevention system. In everyday life we have to execute disaster prevention policy faithfully in order to build up preparedness in advance. While there is disaster, family or community will become basic unit to make quick decision to response, to keep everybody safe, and help each other to protect their lives and properties.





附錄
Appendix

附表一 中、小學生應具備的防災素養

類別	1-3 (國小前半段)	4-6 (國小後半段)	7-9 (國中)
宗旨	建立災害警覺意識	建立正確基本知識與防災態度	建立完整之防災知識、態度、技能素養
目標	1.培養學生對各種災害之警覺心及敏感度。 2.建立學生正確的防災概念及知識。	1.建立學生正確的防災概念及知識。 2.培養學生正面積極的防災態度與價值觀。 3.培養學生防災行動技能及處理災害的能力。	1.建立學生正確的防災概念及知識。 2.培養學生正面積極的防災態度與價值觀。 3.培養學生防災行動技能及處理災害的能力。
防災知識	對災害的認識(警覺心)	1.能說出災害預防與個人生命財產及身心安全的關係。 2.能覺知災害對人及環境帶來之影響及嚴重性。 3.能分辨不同的活動場所內可能產生不同的災害。 4.能預先察覺生活環境中潛在的危機。	1.能找出個人生命財產與災害預防的關係。 2.能覺知良好的生活習慣可以減低災害的發生。 3.能時時刻刻持有「多一分防備少一分災害」的警覺性。 4.能保持警覺心，留意日常生活環境中可能發生的危害並注意其逃生方式。
	對防災常識的了解	1.能解釋災害的定義。 2.在平日即能說出生活周遭災害的種類。 3.能在新環境中，分辨環境的安全性。	1.能從探討環境的改變與破壞可能帶來的災害結果，討論如何防止災害的發生。 2.能說出災害發生對個人生命安全和國家社會成本所帶來之影響。 3.能於平日即提出防範災害於未然之優點。 4.能分別說明本土性和國際性的災害議題。
防災技能	1.能在災害發生後以清楚的言語和文字，適切地描述災害的過程。 2.能在災害發生前，預防災害，使之成為安全的環境。 3.能具有災害應變並處理危險和緊急狀況的能力。 4.能在生活環境中的潛在危機後主動尋求協助。 5.能在災害發生前確實配合做到防災演練之工作。	1.能在災害發生時做出正確的急救措施。 2.能說出救災應注意的事項。 3.能在日常生活中參與人為防災之宣導活動。 4.能在日常生活中配合執行與防災、減災、救災及災後重建的關懷行動。 5.能歸納不同型態災害發生的原因提出可能的解決方法。	1.能蒐集國內外人為防災相關議題與策略。 2.能在日常生活中，參與規劃及改善環境危機所需的預防策略和行動。 3.能在日常生活中，參與規劃及演練緊急情境的處理與救護的策略和行動。 4.能歸納思考不同類型人為災害發生的原因並提出可能的解決方式。 5.能運用科學工具分析災害發生地之現況與變遷。 6.能就自己的防災知識，適時提醒周遭的人們做好預防或處理災害的工作。
防災態度	1.能在日常生活中養成災害預防的積極態度。 2.能分析防災的意義與價值。 3.能敘述存在於環境中災害發生的原因與傷害。 4.能主動積極配合政府和學校的防災宣導。	1.能說出個人生活中與災害相互關係之正確防災態度。 2.能隨時關懷災害發生的人、事、物。 3.能瞭解生活中個人與環境的相互關係並培養關心自然環境相關的個人興趣、嗜好與責任。 4.能主動關懷個人所處的環境，以便達成災害發生時及時逃生之安全目標。 5.能隨時發揮生命共同體的體認，人機已機，人溺己溺的精神。	1.能主動關懷受災民眾之生活環境。 2.能主動參與國內與國際防災議題之討論。 3.能分析災後復建應有的態度及價值觀。 4.能從災害發生的原因分析協助災區救濟及重建計劃。

Table 1 READINESS OF ELEMENTARY SCHOOL STUDENTS FOR DISASTERS

Type	1st-3 rd graders (first half of elementary school)	4 th -6 th graders (second half of elementary school)	7 th -9 th (Middle school)
Purpose	Readiness for disaster	Establishment of sound knowledge and attitude toward disaster	Establishment of sound knowledge, attitude and skill for disaster
Objective	<ol style="list-style-type: none"> 1. To train the students with readiness and sensibility to disasters. 2. To establish sound concept and knowledge about disaster. 	<ol style="list-style-type: none"> 1. To establish sound concept and knowledge about disaster. 2. To help the students establish sound attitude & value for disaster. 3. To train the students with disaster campaign skills and capability of handling disaster. 	<ol style="list-style-type: none"> 1. To establish sound concept and knowledge about disaster. 2. To help the students establish sound attitude & value for disaster. 3. To train the students with disaster campaign skills and capability of handling disaster.
Knowledge	Awareness (readiness)	<ol style="list-style-type: none"> 1. Successful detection of environments of potential disasters with senses and physical contact. 2. Narration of impacts of disasters on mankind and the environment. 3. Capable of indicating sites in gathering centers with potential disasters. 4. Timely sensibility of changes in the environment with readiness for disaster. 	<ol style="list-style-type: none"> 1. Capable of narrating relationship between disaster prevention and personal life, property and physical and mental safety. 2. Awareness of impacts and seriousness disaster can mean to mankind and the environment. 3. Capable of identifying potential disasters in different places of gathering. 4. Timely detection of potential risks in the environment.
	Understanding	<ol style="list-style-type: none"> 1. Understanding of definitions of disasters. 2. Clear narration of types of disasters in the surrounding on a daily basis. 3. Capable of identifying safe areas in new environments. 	<ol style="list-style-type: none"> 1. Capable of narrating causes to disasters. 2. Capable of describing potential disasters inadequate developments can mean to Mother Nature. 3. Capable of identifying existing and potential disaster in the surrounding. 4. Awareness of factors of risks to self and others before disaster strikes. 5. Knowledge of personal responsiveness to disasters.
Skills	<ol style="list-style-type: none"> 1. Clear narration and description of process of disaster after it strikes. 2. Capable of preventing disaster and turning it into safe environment. 3. Capable of confronting with disasters and executing emergency measures. 4. Capable of seeking helps after potential risks in the environment. 5. Capable of materializing disaster drills before it strikes 	<ol style="list-style-type: none"> 1. Capable of providing correct first aid when disaster strikes 2. Capable of detailing rescue remarks. 3. Capable of participation in daily disaster campaigns. 4. Capable of executing disaster, followup, rescue and restoration among other practices of concern. 5. Capable of sorting out causes to different types of disaster with feasible solutions. 	<ol style="list-style-type: none"> 1. Capable of gathering issues and strategies involved in local and international figures. 2. Capable of participating and improving planning preventive strategies and campaigns on daily basis. 3. Capable of participating in planning of emergency strategies and campaigns and drills on daily basis. 4. Capable of sorting out causes to different types of disasters with feasible solutions. 5. Capable of analyzing updates and changes of disaster scenes using scientific means. 6. Capable of reminding people around us be ready for disaster based on our own knowledge about it.
Attitude	<ol style="list-style-type: none"> 1. Active attitude toward prevention in daily living. 2. Successful analysis of meaning and value of disaster effort. 3. Capable of narration of causes and harms disaster can do to the environment. 4. Successful compliance with disaster campaigns launched by the government and school authority. 	<ol style="list-style-type: none"> 1. Capable of detailing correct disaster attitude in association with disaster in our personal life. 2. Capable of rendering concerns about people, events and resources as victims to disaster. 3. Capable of understanding interaction between individuals and the environment and establishing personal interests, hobbies and responsibilities in relation with concern about the environment. 4. Capable of rendering concern about the environment one is involved in for timely evacuation when disaster strikes. 5. Awareness of shared life and capability of reaching out to the needy. 	<ol style="list-style-type: none"> 1. Capable of rendering concerns about environment of victims of disasters. 2. Capable of participating in local and international seminars on disaster. 3. Capable of analyzing attitude and concept about restoration after disaster. 4. Capable of rendering relief and reconstruction plans after analysis of causes to disasters.

附表二 高中職學生應具備的防災素養

類別	天然災害	人為災害
宗旨	充實防災智能	充實防災智能
目標	<ol style="list-style-type: none"> 1.建立學生災害與防災知識架構，並具有跨領域分析能力。 2.建立學生正面的防災態度與觀念。 3.培養學生救災與防災的技能，並參與學校與社會的救災體系。 	<ol style="list-style-type: none"> 1.建立學生對於人為災害與防災相關之制式架構。 2.培養學生對於人為災害防災的積極態度與正確觀念。 3.培養學生預防、應變與復原人為災害的技能。
防災知識	<p>對災害的認識</p> <ol style="list-style-type: none"> 1.認識各種天然災害形成之原因。 2.能由社會、科技與經濟面向分析天然災害所造成之影響。 	<ol style="list-style-type: none"> 1.認識人為災害之種類。 2.認識各種人為災害之發生原因。 3.認識各種人為災害之影響。 4.能從社會、科技、經濟面分析災害對生活、產業、經濟面的影響。
	<p>對防災常識的了解</p> <ol style="list-style-type: none"> 1.了解天然災害之各項預防措施。 2.了解天然災害發生後之救援知識。 3.了解天然災害之復建作法。 	<ol style="list-style-type: none"> 1.了解各種人為災害之預防措施。 2.了解相關人為災害之防救法規。 3.了解人為災害發生後之援救知識。 4.認識人為災害發生後之復原策略。
防災技能	<ol style="list-style-type: none"> 1.天然災害發生時之自保技能。 2.能知悉瞭解學校或社區災害防救計畫。 3.能概括敘述天然災害防治的具體方案。 4.能協助規劃防災宣導計畫及加入防災管理協助社區進行防災工作。 	<ol style="list-style-type: none"> 1.能具人為災害預防設施之檢點能力。 2.具各種人為災害預先防範之技能。 3.具各種人為災害之援救緊急應變智能。 4.能夠利用各種援救設備參與援救。 5.能參與工作職場之防災體系和宣導計畫。
防災態度	<ol style="list-style-type: none"> 1.能積極參與災害防救計畫之擬定。 2.能依循防災中心之專業指導，配合各項防災工作。 3.天然災害之發生有時無法避免，應有防範未然的心態，將災害之影響降至最少。 	<ol style="list-style-type: none"> 1.能以積極的態度，防範可能之人為災害，以預防萬一，並隨時提醒自己及他人。 2.具有隨時熱切參與援救人為災害之心態。 3.預防生活及職場之人為災害，隨時注意設施之可靠性。 4.能負起職場防災人人有責之心態。

Table 2 READINESS OF ORDINARY/VOCATIONAL HIGH SCHOOL STUDENTS FOR DISASTERS

Type	Calamity	Disasters	
Purpose	Improved readiness for disasters	Improved readiness for disasters	
Objective	<ol style="list-style-type: none"> 1. To establish disaster & prevention knowledge with capacity for intarea analyses. 2. To help the students establish sound attitude & concept about disaster. 3. To train the students with rescue & prevention skills with participation in rescue systems on campus and in the community. 	<ol style="list-style-type: none"> 1. Establishment of institutional framework that keeps the students involved in calamities and rescue effort. 2. To help the students establish sound attitude & concept about calamity. 3. To train the students with skills in preventing, confronting with and restoring disasters. 	
Knowledge	Awareness	<ol style="list-style-type: none"> 1. Learning of causes to disasters. 2. Successful analysis of impacts triggered by calamities viewed in social, technological and economic areas. 	<ol style="list-style-type: none"> 1. Learning of types of disasters. 2. Learning of causes to disasters. 3. Learning of impacts of disasters. 4. Successful analysis of impacts on daily living, industry and economy triggered by calamities viewed in social, technological and economic areas.
	Understanding	<ol style="list-style-type: none"> 1. Learning of preventive measures from calamities. 2. Learning of knowledge on rescue after calamities. 3. Learning of restoration practices after calamities. 	<ol style="list-style-type: none"> 1. Learning of preventive measures from disasters. 2. Learning of rescue practices to disasters. 3. Learning of knowledge on rescue efforts after disaster. 4. Learning of restoration strategy after disaster.
Skills	<ol style="list-style-type: none"> 1. Selfprotection skills during calamity. 2. Awareness and learning of calamity plans in schools or communities. 3. Description of physical plans for calamities. 4. Assistance to launch calamity campaigns and participation in calamity management in communities. 	<ol style="list-style-type: none"> 1. Capable of reviewing preventive measure from disaster. 2. Skills of preventing disasters. 3. Capable of knowledge and skills in launching emergency rescue to all kind of disasters. 4. Successful use of rescue gears in rescue efforts. 5. Participation in disaster systems and campaign plans in working field. 	
Attitude	<ol style="list-style-type: none"> 1. Active participation in scheming calamity plans. 2. Compliance with instructions of experts in Calamity Center by coping with all measures. 3. As calamities are inevitable, it is paramount that we are ready for them and make effort in minimizing the impacts. 	<ol style="list-style-type: none"> 1. Active prevention of potential disasters while reminding of oneself and others. 2. Readiness for active participation in disaster rescue efforts at any time. 3. Prevention of disasters in daily living and work by checking the facilities from time to time. 4. Awareness of the fact that successful prevention campaigns depend on everybody. 	

附表三 大專及社會成人應具備的防災素養

類別	大專通識教育 (一般性防災素養)	大專專業系所 (專業性防災素養)	成人綜合型
宗旨	落實防災知識之培養	提升防災技術之訓練	自助服務
目標	<ol style="list-style-type: none"> 1.建立學生對於災害與防災之知識架構，並具有跨領域分析能力。 2.培養學生防災與救災的主動態度與社會責任。 3.培養學生災害防治與應變之技能與參與社會防災體系之能力。 	<ol style="list-style-type: none"> 1.建立學生對於災害與防災之完整、全面與深入之知識結構。 2.培養學生防災與救災的主動態度與社會責任，並影響他人。 3.培養學生災害防治、應變、復原、勘查與參與、領導社會防災體系之能力。 	<ol style="list-style-type: none"> 1.建立社會大眾對於災害與防災的應用知識。 2.培養社會大眾對於防災工作之積極態度。 3.培養社會大眾防災的技能與主動參與社區防災體系的能力與習慣。
防災知識	對災害的認識 <ol style="list-style-type: none"> 1.瞭解災害的種類、原因及可能造成之損失與衝擊。 2.知道平時減災預防工作的重要性與內容。 	<ol style="list-style-type: none"> 1.知道人為開發對環境與抗災能力造成的影響。 2.瞭解災害之成因與地區災害特性。 3.瞭解各項救災工作之關鍵技術。 	<ol style="list-style-type: none"> 1.瞭解災害的種類、原因、可能造成的危險及地區災害特性。 2.具備平時應進行災害預防工作的認識。 3.瞭解災害對於環境、社會及經濟層面造成的影響。
	對防災常識的了解 <ol style="list-style-type: none"> 1.知道平時減災、災前整備、災時應變、災後復建等各階段防救災工作之重要性。 2.知道平時減災、災前整備、災時應變、災後復建等各階段防救災工作要項。 3.知道災害潛勢圖的意義與應用。 4.知道災害發生前後可以尋求資訊與支援的方式。 	<ol style="list-style-type: none"> 1.知道一些可以減輕災害所帶來損失的預防方法和相關技術。 2.知道防救災技術之相關資訊與支援的方式。 3.知道平時減災、災前整備、災時應變、災後復建等各階段防救災相關技術。 4.知道災害潛勢圖的製作技術。 	<ol style="list-style-type: none"> 1.知道一些可以減輕災害所帶來損失的預防方法。 2.瞭解災害發生時，保護自身安全應具備的應變措施。 3.知道災害發生前後可以尋求資訊與支援的方式。
防災技能	<ol style="list-style-type: none"> 1.瞭解因應災害之逃生路線與避難地點。 2.災害事件發生時能夠自救與助人。 3.能有效配合學校或社區於災害發生時的應變或疏散避難計畫。 4.能參與防救災體系協助學校或社區進行防救災或疏散避難工作。 	<ol style="list-style-type: none"> 1.能掌握防災工程之規劃設計要領。 2.能瞭解各項防災工程項目之抗災能力。 3.能於災害事件發生後協助進行勘災調查或鑑定工作。 4.能協助學校或社區擬訂災害防救計畫。 	<ol style="list-style-type: none"> 1.瞭解因應災害之逃生路線與避難地點。 2.災害事件發生時能夠保護自身安全，並協助家人及鄰居進行應變與避難。
防災態度	<ol style="list-style-type: none"> 1.能以積極態度加入防災應變計畫的擬定和演練。 2.能尊重防救災的專業指導配合執行各項防救災工作。 3.知道宣導防救災工作和疏散避難計畫的重要性。 	<ol style="list-style-type: none"> 1.能協助擬定和演練防災應變或疏散避難計畫。 2.能主動宣導防救災工作和疏散避難計畫的重要性。 3.以專業技能協助推動災害防救工作和疏散避難計畫。 	<ol style="list-style-type: none"> 1.能認知災害發生的必然性，並以正向態度面對災害的發生。

Table 3 READINESS OF COLLEGE STUDENTS AND ADULTS FOR DISASTERS

Stage	College	College	Adults
Type	Common knowledge education (General disaster education)	Departments & schools (Professional disaster education)	Combined
Purpose	Materialization of knowledge about disaster	Upgrading of training on rescue techniques	Selfaid service
Objective	<ol style="list-style-type: none"> 1.Establishment of institutional framework that keeps the students involved in calamities and rescue effort. With capability of interarea analysis. 2. To help the students establish sound attitude & responsibilities with the community. 3. To train the students with disaster campaign skills and capability of handling disaster. 	<ol style="list-style-type: none"> 1. Establishment of complete, overall and deep structure of knowledge about disaster for the students. 2. Training the students on active participation and responsibility for rescue campaigns and reach out to others. 3. Training the students on prevention, responsiveness, restoration, survey and participation as well as leadership in disaster systems of the community. 	<ol style="list-style-type: none"> 1. To establish applicable knowledge for the population about disaster and disaster effort. 2. To educate the population to become active in dealing with disaster tasks. 3. To educate the population on disaster skills and capability and habit of active participation in disaster systems.
Knowledge	Awareness	<ol style="list-style-type: none"> 1.Awareness of impacts on the environment and disaster preparedness by development plans. 2.Understanding of causes to disasters and natures of regional disasters. 3.Understanding of key techniques to all rescue tasks. 	<ol style="list-style-type: none"> 1.Understanding of type, causes, potential risks of disaster and atureof regional disasters. 2.Knowledge about prevention tasks. 3.Understanding of impacts disaster can mean to the environment, community and economy.
	Understanding	<ol style="list-style-type: none"> 1..Knowing of importance of disaster, preparation, emergency measures and restoration as well as other tasks in different stages. 2.Knowing of importance of disaster, preparation, emergency measures and restoration. 3.Knowing of meaning and application of potential charts of disasters. 4.Knowing of available information and support before and after disaster. 	<ol style="list-style-type: none"> 1.Knowing of some preventive practices that can minimize losses. 2.Understanding of emergency means for selfprotection. 3.Knowing of available information and backup manners before and after disaster strikes.
Skills	<ol style="list-style-type: none"> 1.Understanding of evacuation route and refuge in case disaster strikes. 2.Self aid and assistance to others when disaster strikes 3.Successful emergency or evacuation plans with school authorities or communities when disaster strikes. 4.Participation in disaster systems for assistance to schools or Communities in rendering disaster tasks or evacuation task. 	<ol style="list-style-type: none"> 1.Successful control of planning and design of prevention works. 2.Understanding of capacity of all disaster tasks. 3.Assistance to surveys or assessment after disaster strikes. 4.Assistance to schools or communities in scheming disaster plans. 	<ol style="list-style-type: none"> 1.Understanding of evacuation access and site of refuge when disaster strikes. 2.Capability of rendering self protection while helping families and neighbors evacuate when disaster strikes.
Attitude	<ol style="list-style-type: none"> 1.Active participation in disaster plans with planning and drills. 2.Respect to experts by executing disaster tasks. 3.Understanding of importance of disaster task and evacuation plans. 	<ol style="list-style-type: none"> 1.Assistance in scheming and rehearsing disaster drills or evacuation plans. 2.Active campaigns and evacuation plans. 3.Assistance to disaster task and evacuation plans with professional skills. 	<ol style="list-style-type: none"> 1.Understanding of occurrence of disaster and capability of confronting with it. 2.Knowing of importance of disaster campaign with attention to the content of all campaigns. 3.Knowing of importance of disaster drills and community campaigns with cooperation or assistance to the campaigns.

附表四 歷年重大地震災害統計表

編號	地震名稱	發生時間	震源深度 (公里)	地震規模 (M _L)	人口死傷		房屋損毀	
					死	傷	全	半
1	斗六地震	1904.11.06 04:25	7.0	6.1	145	158	661	1112
2	梅山地震	1906.03.17 06:43	6.0	7.1	1258	2385	6769	3633
3	南投地震系列	1916.08.28 15:27	45.0	6.8	16	159	614	954
		1916.11.15 06:31	3.0	6.2	1	20	97	200
		1917.01.05 00:55	很淺	6.2	54	85	130	230
		1917.01.07 02:08	很淺	5.5	—	21	187	221
4	新竹-台中地震	1935.04.21 06:02	5.0	7.1	3276	12053	17907	11405
5	中埔地震	1941.12.17 03:19	12.0	7.1	358	733	4520	6910
6	新化地震	1946.12.05 06:47	5.0	6.1	74	482	1954	2084
7	縱谷地震系列	1951.10.22 05:34	4.0	7.3	68	856	—	—
		1951.10.22 11:29	1.0	7.1	—	—	—	—
		1951.10.22 13:43	18.0	7.1	—	—	—	—
		1951.11.25 02:47	16.0	6.1	—	—	—	—
		1951.11.25 02:50	36.0	7.3	17	326	1016	582
8	恒春地震	1959.08.15 16:57	20.0	7.1	16	85	1214	1375
9	白河地震	1964.01.18 20:04	18.0	6.3	106	653	10924	30041
10	花蓮地震	1986.11.15 05:20	15.0	6.5	13	45	37	33
11	集集大地震	1999.09.21 01:47	8.0	7.3	2405	10718	53661	53024

資料來源：中央氣象局

Table 4 Statistics of Major Earthquakes

No.	Name	Time	Focus Depth (KM)	Scale (M _L)	casualties		Building Ruined	
					Ceased	Injured	All	Half
1	Dou Liou Earthquake	1904.11.06 04:25	7.0	6.1	145	158	661	1112
2	Mei San Earthquake	1906.03.17 06:43	6.0	7.1	1258	2385	6769	3633
3	NanTou Earthquake Series	1916.08.28 15:27	45.0	6.8	16	159	614	954
		1916.11.15 06:31	3.0	6.2	1	20	97	200
		1917.01.05 00:55	很淺	6.2	54	85	130	230
		1917.01.07 02:08	很淺	5.5	—	21	187	221
4	ShinChu-Taichung Earthquake	1935.04.21 06:02	5.0	7.1	3276	12053	17907	11405
5	ChungPu Earthquake	1941.12.17 03:19	12.0	7.1	358	733	4520	6910
6	ShinHua Earthquake	1946.12.05 06:47	5.0	6.1	74	482	1954	2084
7	Valley Earthquake	1951.10.22 05:34	4.0	7.3	68	856	—	—
		1951.10.22 11:29	1.0	7.1	—	—	—	—
		1951.10.22 13:43	18.0	7.1	—	—	—	—
		1951.11.25 02:47	16.0	6.1	—	—	—	—
		1951.11.25 02:50	36.0	7.3	17	326	1016	582
8	HemChun Earthquake	1959.08.15 16:57	20.0	7.1	16	85	1214	1375
9	BaiHer Earthquake	1964.01.18 20:04	18.0	6.3	106	653	10924	30041
10	HuaLian Earthquake	1986.11.15 05:20	15.0	6.5	13	45	37	33
11	ChiChi Earthquake	1999.09.21 01:47	8.0	7.3	2405	10718	53661	53024

Source: Central Weather Bureau

附表五 歷年颱風災害統計表

年別	侵台颱風次數	受災人數（人）			房屋倒塌（戶）	
		死亡	失蹤	受傷	全倒	半倒
75	4	83	22	464	6723	31844
76	4	65	14	47	526	1356
77	4	5	5	1	5	2
78	1	32	20	47	430	760
79	6	67	16	32	182	309
80	6	6	6	22	50	160
81	4	8	6	15	13	4
82	3	—	—	—	—	—
83	6	51	17	173	202	310
84	4	5	26	14	14	32
85	5	54	22	472	503	881
86	3	44	2	124	122	28
87	5	33	14	31	14	42
88	1	1	5	—	—	1
89	6	76	34	176	434	1726
90	8	225	129	585	646	1978
91	3	2	4	12	—	—

附表六 歷年火災災害統計表

年別	總計（件數）	死亡	受傷	房屋損失（千元）	財物損失（千元）	合計（千元）
86	15115	226	633	632561	2004607	2637168
87	14555	306	763	665781	2216852	2882633
88	18254	230	643	667730	1942553	2610283
89	15560	262	732	628279	1715507	2343786
90	13750	234	807	940277	14621457	15561734
91	13244	193	672	514046	1683026	2197072

資料來源：內政部消防署

Table 5 Statistics of Typhoon Disasters

Year	Number of typhoon hit Taiwan	Casualties			Building Ruined	
		Ceased	Missing	Injured	All	Half
75	4	83	22	464	6723	31844
76	4	65	14	47	526	1356
77	4	5	5	1	5	2
78	1	32	20	47	430	760
79	6	67	16	32	182	309
80	6	6	6	22	50	160
81	4	8	6	15	13	4
82	3	—	—	—	—	—
83	6	51	17	173	202	310
84	4	5	26	14	14	32
85	5	54	22	472	503	881
86	3	44	2	124	122	28
87	5	33	14	31	14	42
88	1	1	5	—	—	1
89	6	76	34	176	434	1726
90	8	225	129	585	646	1978
91	3	2	4	12	—	—

Table 6 Statistics of Fire Hazards

Year	Total Numbers	Ceased	Injured	Building Loss in NT\$1000	Property Loss In NT\$1000	Total Loss In NT\$1000
86	15115	226	633	632561	2004607	2637168
87	14555	306	763	665781	2216852	2882633
88	18254	230	643	667730	1942553	2610283
89	15560	262	732	628279	1715507	2343786
90	13750	234	807	940277	14621457	15561734
91	13244	193	672	514046	1683026	2197072

Source: National Fire Agency, Ministry of Interior

附表七 全國防救災單位通訊表

單位	聯絡地址	聯絡電話
內政部消防署	台北市襄陽路 1 號 7 樓	(02)2388-2119
台北市政府消防局	台北市松仁路 1 號	(02)2729-7668
高雄市政府消防局	高雄市中正三路 25 號 7 樓	(07)227-1128-9
基隆市消防局	基隆市基金一路一二九巷 6 號	(02)2430-2691-3
新竹市消防局	新竹市西大路 679 號	(03)522-9508
台中市消防局	台中市中港路一段 250 號	(04)2310-1119
嘉義市消防局	嘉義市立學街 16 號	(05)271-6660
台南市消防局	台南市安平區永華路二段 898 號	(06)297-5119
台北縣政府消防局	台北縣板橋市莒光路 161 號	(02)2253-5110
桃園縣政府消防局	桃園市三民路三段 26 號	(03)337-9119
新竹縣消防局	新竹縣竹北鎮光明六路 12 號	(03)551-3522
苗栗縣消防局	苗栗市金鳳街 111 號	(037)338-110
台中縣消防局	台中縣豐原市圓環北路一段 321 號	(04)2523-1864
南投縣政府消防局	南投縣民族路 494 號	(049)222-5134
彰化縣消防局	彰化縣彰化市中央路 1 號	(04)751-2119
雲林縣消防局	雲林縣斗六市公園路 6 號	(05)532-5707
嘉義縣消防局	嘉義縣太保市祥和二路東段 6 號	(05)362-0233
台南縣消防局	台南縣新營市三興街 380 號	(06)656-9119
高雄縣政府消防局	高雄縣鳳山市王生明路一段 360 號	(07)792-6119
屏東縣消防局	屏東縣屏東市勝利東路 47 號 3 樓	(08)736-0162
宜蘭縣政府消防局	宜蘭縣宜蘭市中華路 100 號	(03)936-5027
花蓮縣消防局	花蓮縣花蓮市三民街 53 號	(03)832-2119
台東縣消防局	台東縣台東市四維路三段 1 號	(089)322-112
澎湖縣消防局	澎湖縣馬公市新生路 205 號	(06)926-3346
基隆港務消防隊	基隆市中山二路 117 號	(02)2422-3009
台中港務消防隊	台中縣梧棲鎮中橫四路 6 號	(04)657-2480
高雄港務消防隊	高雄市鼓山區蓬萊路 25 號	(07)562-2601
花蓮港務消防隊	花蓮縣花蓮市港口路 25 號	(03)823-0103
金門縣消防局	金門縣金寧鄉頂林路 315 號	(0823)24021
連江縣消防局	馬祖南竿清水村 84 之 1 號	(0836)23799
中華民國搜救總隊		(03)3772272
財團法人防焰安全中心基金會		(02)2597-0199

Table 7 List of Disaster Prevention Unit

Unit	Address	TEL
National Fire Agency, MOI	7F, No. 1, Hsiangyang Rd., Taipei City	(02)2388-2119
Taipei Fire Department	No. 1, Sungjen Rd., Taipei City	(02)2729-7668
Kaohsiung Fire Department	7F, No. 25, Chungcheng 3 rd Rd., Kaohsiung City	(07)227-1128-9
Keelung Fire Department	No. 6, Lane 129, Keechin 1 st Rd., Keelung City	(02)2430-2691-3
Shinchu Fire Department	No. 679, Hsita Rd., Hsinchu City	(03)522-9508
Taichung Fire Department	No. 250, Sec. 1, Chungkang Rd., Taichung City	(04)2310-1119
Chiayi Fire Department	No. 16, Lihseh St., Chiayi City	(05)271-6660
Tainan Fire Department	No. 898, Sec. 2, Yunghua Rd., Anping District, Tainan City	(06)297-5119
Taipei Hsien Fire Department	No. 161, Chukuang Rd., Panchiao City, Taipei Hsien	(02)2253-5110
Taoyuan Hsien Fire Department	No. 26, Sec. 3, Sanmin Rd., Taoyuan City	(03)337-9119
Shinchu Hsien Fire Department	No. 12, Kuangming 6 th Rd., Chupei Chen, Hsinchu Hsien	(03)551-3522
Miaoli Hsien Fire Department	No. 111, Chinfeng St., Miaoli City	(037)338-110
Taichung Hsien Fire Department	No. 321, Sec. 1, Yuanhuan N. Rd., Fengyuan City, Taichung Hsien	(04)2523-1864
Nantou Hsien Fire Department	No. 494, Minchu Rd., Nantou Hsien	(049)222-5134
Changhua Hsien Fire Department	No. 1, Chungyang Rd., Changhua City, Changhua Hsien	(04)751-2119
Yunlin Hsien Fire Department	No. 6, Kungyuan Rd., Touliu City, Yunlin Hsien	(05)532-5707
Chiayi Hsien Fire Department	No. 6, Sec. E, Hsiangho 2 nd Rd., Taipao City, Chiayi Hsien	(05)362-0233
Tainan Hsien Fire Department	No. 380, Sanhsing St., Hsinying City, Tainan Hsien	(06)656-9119
Kaohsiung Hsien Fire Department	No. 360, Sec. 1, Wangsheng Ming Rd., Fengshan City, Kaohsiung Hsien	(07)792-6119
Pingtung Hsien Fire Department	3F, No. 47, Shengli E. Rd., Pingtung City, Pingtung Hsien	(08)736-0162
Yilan Hsien Fire Department	No. 100, Chunghua Rd., Yilan City, Yilan Hsien	(03)936-5027
Hualien Hsien Fire Department	No. 53, Sanmin St., Hualien City, Hualien Hsien	(03)832-2119
Taitong Hsien Fire Department	No. 1, Sec. 3., Szuwei Rd., Taichung City, Taitung Hsien	(089)322-112
Penghu Hsien Fire Department	No. 205, Hsinsheng Rd., Makung City, Penghu Hsien	(06)926-3346
Keelung Harbor Fire Brigade	No. 117, Chungshan 2 nd Rd., Keelung City	(02)2422-3009
Taichung Harbor Fire Brigade	No. 6, Chungheng 4 th Rd., Wuchi Chen, Taichung Hsien	(04)657-2480
Kaohsiung Harbor Fire Brigade	No. 25, Penglai Rd., Kushan District, Kaohsiung City	(07)562-2601
Hualien Harbor Fire Brigade	No. 25, Kangkou Rd., Hualien City, Hualien Hsien	(03)823-0103
Chinmen Hsien Fire Department	No. 315, Tinglin Rd., Chinning Hsiang, Chinmen	(0823)24021
LianJian Hsien Fire Department	No. 84-1, Chingshui Tsun, Nankan, Machu	(0836)23799
International Headquarters SAR, R.O.C.		(03)3772272
Foundation of fire retardant safety center		(02)2597-0199

附表八 相關專業技師公會通訊表

機關名稱	聯絡地址	聯絡電話
中華民國建築師公會 全國聯合會	台北市基隆路 2 段 51 號 13 樓之 1	(02)2377-5108
台灣省建築師公會	台中市台中港路 1 段 400 號 11 樓	(04)2316-0922
台北市建築師公會	台北市基隆路 2 段 51 號 13 樓	(02)2377-3011
高雄市建築師公會	高雄市博愛一路 366 號 23 樓	(07)323-7248
中華民國土木技師公會 全國聯合會	台北市東興路 26 號 9 樓	(02)27481699
台灣省土木技師公會	台北縣板橋市三民路二段 37 號 12 樓 A3	(02)29542266
台北市土木技師公會	台北市東興路 28 號 9 樓	(02)27455168
高雄市土木技師公會	高雄市鼓山區中華一路 203 號 3 樓	(07)5520279
中華民國結構工程技師 公會全國聯合會	台北市東興路 37 號 7 樓	(02)87681117
台灣省結構工程技師公會	台北縣板橋市文化路一段 266 號 21 樓之 2	(02)22547420
台北市結構工程技師公會	台北市東興路 37 號 7 樓	(02)87681118
高雄市結構工程技師公會	高雄市前鎮區二聖一路 288 號 5 樓之 1	(07)7138518
台灣省大地工程技師公會	台北市仁愛路 4 段 300 巷 31 弄 4 號 1 樓	(02)27048826
台北市大地技師公會	台北市仁愛路 4 段 300 巷 31 弄 4 號 1 樓	(02)27048826
高雄市大地工程技師公會	高雄市苓雅區 802 中正一路 287 號 2 樓	(07)7255522
中華民國水土保持技師 公會全國聯合會	板橋市文化路二段 182 巷 3 弄 52 號 2 樓	(02)22538151
台灣省水土保持技師公會	板橋市文化路二段 182 巷 3 弄 52 號 2 樓	(02)82581918
台北市水土保持技師公會	板橋市文化路二段 182 巷 3 弄 52 號 2 樓	(02)22544483
高雄市水土保持技師公會	台北市北投區明德路 118 巷 17 號 5 樓	(02)28221180
中華民國應用地質技師 公會全國聯合會	台北市信義區永吉路 75 號 12 樓	(02)27563366
台灣省應用地質技師公會	台北市建國南路一段 291 巷 9 號 6 樓	(02)27093335
台北市應用地質技師公會	台北市建國南路一段 291 巷 9 號 6 樓	(02)27093335
高雄市應用地質技師公會	高雄市七賢二路 68 號	(07)2311135

Table 8 Professional Engineering Association

Organization	Address	TEL
The National Association of Architect, R.O.C.	13F-1, No. 51, Sec. 2, Keelung Rd., Taipei City	(02)2377-5108
Taiwan Architects Association	11F, No. 400, Sec. 1, Taichung Rd., Taichung City	(04)2316-0922
Taipei Architects Association	13F, No. 51, Sec. 2, Keelung Rd., Taipei City	(02)2377-3011
Kaohsiung Architects Association	23F, No. 366, Poai 1 st Rd., Kaohsiung City	(07)323-7248
Chinese Union of Professional Civil Engineers Associations	9F, No. 26, Tunghsing Rd., Taipei City	(02)27481699
Taiwan Professional Civil Engineers Association	A3, 12F, No. 37, Sec. 2, Sanmin Rd., Panchiao City, Taipei Hsien	(02)29542266
Taipei Professional Civil Engineer Association	9F, No. 28, Tunghsing Rd., Taipei City	(02)27455168
Kaohsiung Professional Civil Engineers Association	3F, No. 203, Chunghua 1 st Rd., Kushan District, Kaohsiung City	(07)5520279
Professional Structural Engineers Society, R.O.C.	7F, No. 37, Tunghsing Rd., Taipei City	(02)87681117
Taiwan Structure Engineering Association	21F-2, No. 266, Sec. 1, Wenhua Rd., Panchiao City, Taipei Hsien	(02)22547420
Taipei Professional Structural Engineering Association	7F, No. 37, Tunghsing Rd., Taipei City	(02)87681118
Kaohsiung Professional Structural Engineering Association	5F-1, No. 288, Ersheng 1 st Rd., Chienchen District, Kaohsiung City	(07)7138518
Taiwan Geotechnical Engineering Association	1F, No. 4, Alley 31, Lane 300, Sec. 4, Jenai Rd., Taipei City	(02)27048826
Taiwan Geotechnical Engineering Association	1F, No. 4, Alley 31, Lane 300, Sec. 4, Jenai Rd., Taipei City	(02)27048826
Kaohsiung Geotechnical Engineering Association	2F, No. 287, Chungcheng 1 st Rd., Lingya District, Kaohsiung City	(07)7255522
Chinese Union of Professional Soil and Water Conservation Engineers Association	2F, No. 52, Alley 3, Lane 182, Sec. 2, Wenhua Rd., Panchiao City, Taipei Hsien	(02)22538151
Taiwan Professional Soil and Water Conservation Engineers Association	2F, No. 52, Alley 3, Lane 182, Sec. 2, Wenhua Rd., Panchiao City, Taipei Hsien	(02)82581918
Taipei Professional Soil and Water Conservation Engineers Association	2F, No. 52, Alley 3, Lane 182, Sec. 2, Wenhua Rd., Panchiao City, Taipei Hsiebn	(02)22544483
Kaohsiung Professional Soil and Water Conservation Engineers Association	5F, No. 17, Lane 118, Mingte Rd., Peitou District, Taipei City	(02)28221180
Professional Applied Geological Engineer Association, R.O.C.	12F, No. 75, Yungchi Rd., Hsinyi District, Taipei City	(02)27563366
Taiwan Professional Applied Geological Engineer Association	6F, No. 9, Lane 291, Sec. 1, Chienkuo S. Rd., Taipei City	(02)27093335
Taipei Professional Applied Geological Engineer Association	6F, No. 9, Lane 291, Sec. 1, Chienkuo S. Rd., Taipei City	(02)27093335
Kaohsiung Professional Applied Geological Engineer Association	No. 68, Chihsien 2 nd Rd., Kaohsiung City	(07)2311135

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