LAMPIRAN

Panduan Kurikulum BOKOMI Guide, Sharing Lessons Learned by the City of Kobe from the Great Hanshin-Awaji Earthquake, Community Emergency Drill Program.

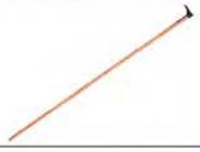
3

Equipment and Materials for Disaster Risk Reduction

- What kinds of equipment and materials are needed? -

Learning lessons from the Great Hanshin-Awaji Earthquake, Kobe City deployed equipment and materials for disaster risk reduction in communities.
This section explains the main types of equipment and materials for disaster risk reduction.

1. Main Types of Equipment and Materials

Use	Name	Description	Photograph
Rescue	Portable concrete smashing tool	This tool smashes concrete using the reaction force created by sliding the weight on the handle. Different blades are available for different application.	
Rescue	Fire hook	It is used to break up galvanized iron roofs, wainscots, etc. It is also used to remove board-shaped debris.	
Rescue	Safety harness belt for rescue operations	It is used to ensure safety during operations at heights. An operator wears the belt around his/her waist and attaches the safety rope to a solid part of a building, etc.	
Rescue	Portable winch	It is used in combination with a rope to move things which cannot be moved by people alone, as well as to tighten ropes. The operator needs to be well informed about how to use it in order to use it appropriately.	
Rescue	Chain saw	It is used to cut wood, etc. It is important for this equipment to be maintained regularly or it may not work in an emergency.	
Rescue	Shovel	It is essential for removing earth, etc. It is also useful for making sandbags.	
Rescue	Crowbar	It is used to jimmy open doors and shutters, and to lift objects using the principle of the lever.	

Rescue	**Folding saw**	A folding saw is handy when carried around. It is also useful when operating in narrow spaces because of its flexibility.	
Rescue	**S a w**	It is suitable for cutting larger pieces of wood because it has a longer blade than a portable saw.	
Rescue	**A x e**	The edge of the blade is used to break up planks, etc. and the pointed part at the back is suitable for breaking mortar walls.	
Rescue	**Hammer**	It is suitable for breaking block walls. Care is needed when handling it because it is heavy.	
Rescue	**Portable jack**	It is used to lift heavy objects and to widen openings. It can only be used where the floor is solid (firm).	
Rescue	**Pickaxe**	It is used to dig up firm ground and to make holes in walls, etc.	
Rescue	**Bolt clipper**	It is used to cut reinforcing steel in reinforced concrete and block walls.	
Rescue	**Hydraulic concrete crusher**	It can crush concrete walls, etc. It can crush walls of up to 25 cm thick.	
Transportation	**Folding stretcher**	It is used to carry the injured, etc. It can be folded and put away when it is not being used.	

Firefighting	**Portable power pump**	Water from a natural water supply such as a river or pond as well as fire cisterns can be sprayed using the pump. This can be used in combination with a portable water tank for drills.	
Firefighting	**Powder fire extinguisher for class A, B and C fires**	It is a typical fire extinguisher which can be used for ordinary combustible materials, oils and electrical equipment. It is reusable by refilling the powder after usage.	
Firefighting	**Wet chemical fire extinguisher**	It is a fire extinguisher for domestic use. It does not block the view because it is not powder. Wet chemical can be sprayed several times because it can be turned on and off.	
Firefighting	**Canvas bucket**	It is a water-proof canvas bucket. It can be stored easily and is easy to handle because it is light weight. It is used for bucket brigades, etc.	
Firefighting	**Portable water tank (stand-alone)**	It comes in many sizes. The largest tank can hold 1,000 liters of water. It is used as a water source for bucket brigades, etc.	
Fire drill	**Oil pan for use in fire drills**	It can be used by putting water and gasoline or kerosene into it and setting it on fire in order to practice firefighting. Do not put content exceeding the appropriate amount which is specified for each size of oil pan.	
Fire drill	**Water fire extinguisher for use in fire drills**	It is a fire extinguisher for training which ejects water. It is used to learn how to handle a fire extinguisher. It can be used by putting water and compressed air into it.	

* Kobe City provided equipment and materials for each BOKOMI (community based voluntary organization for disaster risk reduction) after showing the residents a list of the equipment and materials explained above and asking them to choose what they needed, when the organization was established.
Residents should have an opportunity to discuss among themselves what kinds of equipment and materials they need for their community.

* In Kobe, the equipment and materials are stored in storehouses in local parks, etc.

2. Maintenance

Equipment and materials need to be maintained regularly. Properly maintain them so that they can be used in an emergency.
It is also a good idea to practice the handling of the equipment and materials when conducting their maintenance.

3. Maintenance Methods

(1) Equipment and Materials for Rescue Operations

(i) Axes, hatchets, saws, shovels, crowbars, hammers, bolt clippers, etc.
Remove moisture after usage in order to avoid the rusting of metal parts and the decaying of handles. Sharpen the blades.
Apply lubricant to moving parts.

(2) Firefighting Equipment and Materials

(i) Power pumps, etc.
Open the pump's drain cock to drain water completely before storing. Make sure to rinse inside the pump with fresh water if seawater was used.
Check the fuel and the vacuum pump oil, refill the fuel and the oil to the appropriate levels, and then pull the starter a few times.
Avoid humid places when storing pumps. During the cold season, take measures to prevent freezing after usage.
Note: Conduct a starting test together with the practice at least once a month.

(ii) Canvas hoses, suction pipes, canvas buckets, etc.
Drain the water from hoses and suction pipes before putting them away.
Dry them well before storing after usage.

Tips for This Program

☆ Some portable power pumps, engine generators, etc. use a "blended fuel (mixture of gasoline and oil)." Each model uses a specific blend (such as "25:1"), and so check the instructions carefully. Be sure to use the correct amounts when you mix the fuel by yourself.

☆ Always check the equipment and materials before and after usage. In particular, portable power pumps and engine generators can be kept in good condition by running them. Conduct starting tests on them regularly.

☆ Remove batteries from equipment and store them after usage, if you have equipment which uses batteries.

☆ These equipment and materials for disaster risk reduction are only useful if they can be used in emergencies. Therefore, it is important to check regularly to see if they are in a usable condition. Practice using them at the same time.

30 min. or longer

4

Training Using "Water Fire Extinguishers for Use in Fire Drills"

This section explains the training for the handling of fire extinguishers using water fire extinguishers for use in drills. This training can be conducted with children if it is designed in the correct way.

1. Objective

Participants learn how to handle fire extinguishers using water fire extinguishers for use in drills which can be used repeatedly, by operating them in the same way as real fire extinguishers.

2. Necessary Equipment and Materials

(Item)	(Quantity)
Water fire extinguisher for use in drills	10 (depends on the number of participants)
Air compressor	1
Cord reel (extension cord)	1
Water tank (or tap water)	1
Cross-sectional model of a fire extinguisher	1 (if available)
Target for water fire extinguishers	1 set

Tips for This Program

☆ Various objects can be used as targets. People can practice how to use fire extinguishers well while having fun if targets are designed so that all the targets can be hit within one ejection period.

3. Training Using Games for Children

Targets can be designed so that children can experience a firefighting simulation while enjoying the game.

(1) PET Bottles with a Small Amount of Water in Them

The number of bottles which can be hit within one ejection time is 8 or 9.
The participants play a game where they have to hit all the bottles on a desk, etc.

(2) Making Balls Drop by Hitting them with Water

The participants play a game where they have to spray a basket ball-sized ball on a stand and make it fall to the ground.

(3) Others

Using targets which spin or fall when being hit by water can make the training fun for adults as well as children.

4. Procedures

(1) Preliminary Explanation

Explain the mechanism of powder fire extinguishers, how to use them, their characteristics, etc. using a cross-sectional model of a fire extinguisher (if available) or a leaflet which shows how to use a fire extinguisher issued by fire stations or other government organizations. Also, explain the difference between a fire extinguisher for use in drills and a real fire extinguisher.

(2) Preparation

★Preparing Water Fire Extinguishers

Prepare the necessary number of water fire extinguishers. If you can obtain one extinguisher for each participant, you can fill them with water in advance, so that you do not need to bring an air compressor to the venue on the training day.

★Preparing Targets

[PET Bottles]

- Prepare empty PET bottles (1.5 L bottles if possible) in advance.
- Fill each bottle about a quarter full and put the lid on.
- Place the necessary number of bottles on a reasonably tall surface.

[Other Targets]

- You can make other interesting targets by yourselves. You can also contact fire stations or other government organizations because they might have targets which can be used for fire drills.

(3) Conducting a Drill

Participants will practice firefighting in turn. Ask for comments from fire station staff about the drill at the end of the drill.

Tips for This Program

☆ In the case of a real fire, if the fire spreads to the ceiling, stop fighting the fire with fire extinguishers (initial firefighting) and instead use an indoor fire hydrant, etc. or quickly evacuate and call the fire service organization.

Points to Include in the Talk to the Participants

☆ Ask the participants to check where in their house and their community the fire extinguishers are installed.

☆ Ask them to check the types of fire extinguishers installed in their house (powder type, wet chemical type, etc.).

30 min. or longer

5

Fire Drills Using "Powder Fire Extinguishers"

By experiencing more realistic firefighting simulations using real fire and real fire extinguishers (powder fire extinguishers), the participants can learn how to use the equipment for any emergency.

1. Objective

The participants learn how to fight fires in emergencies by practicing firefighting using real fire and powder fire extinguishers.

2. Necessary Number of Staff (In the Case of about 30 Participants)

4-5 staff

Note: Ask for attendance of fire station staff because it is a dangerous operation. Consult with fire stations, etc. in advance if you wish to ask for their attendance.

3. Necessary Equipment and Materials (In the Case of about 30 Participants)

Note: Fire stations and other government organizations may have some of the equipment. Borrow anything available from them when conducting a drill.

(Item)	(Quantity)
Powder fire extinguisher	5-6
Oil pan	1
Kerosene	2 L
Gasoline	1 L
Lighter	1
Torch	1
Cross-sectional model of a fire extinguisher (if available)	1

4. Outline

Place an oil pan in the center of a park. Spray the powder fire extinguisher from a position 5-6 meters upwind of the target. Move the spray as if sweeping with a broom to extinguish the fire. Gradually approach the target as the fire gets smaller, then extinguish the fire completely.

5. Procedures

(1) Preliminary Explanation

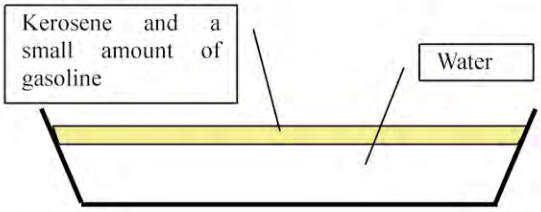
Participants learn about the mechanism and the handling of fire extinguishers by looking at a cross-sectional model of a fire extinguisher or by experiencing the handling of fire extinguishers using water fire extinguishers for use in drills, before practicing using powder fire extinguishers.

Caution!

Make sure to check the exterior appearance of powder fire extinguishers. Ones with rust on their body might explode because of inside pressure when pressing the lever, causing a severe accident. Do not use them if you find rust on their body.

(2) Preparation

- Prepare several fire extinguishers according to the design of the drill.
- Tell everybody around the site in advance that the exercise is about to start because the powder can disperse around the site when the exercise is conducted.
- Put water in an oil pan up to 2-3 cm from the bottom (to prevent scorching)
- Put kerosene in the oil pan. The appropriate amount is about 100 cc, although it depends on the size of the oil pan.
- Add a small amount of gasoline in order to ignite the fire (add gasoline right before setting the fire).



(3) Conducting a Drill

- The participants practice firefighting in turn.
- After spraying powder several times, ignition becomes difficult because extinguishing agent starts accumulating in the oil pan. Remove the agent from the pan with a net, etc. and add a small amount of gasoline again, so that fire can be ignited easily.

(4) Others

Dispose of the oils used in the drill appropriately.

Take the fire extinguisher close to the fire, and then pull the safety pin with a finger to upright.

Free the hose and aim the nozzle at the fire source.

Hold the lever hard enough to spray (move the spray as if sweeping with a broom to extinguish fire).

Tips for This Program

☆ In general, a degree of fire which can be fought using initial firefighting methods is until a fire spreads to the ceiling. If it happens, do not try risky initial firefighting, evacuate right away and then call the fire service organization for help.

Points to Include in the Talk to the Participants

☆ Wet chemical fire extinguishers are effective when oil fryers catch fire.

☆ It is recommended that domestic fire extinguishers should be installed in the entrances of houses (to prevent rust).

☆ Ask the participants to check where the fire extinguishers are installed in their community.

30 min. or longer | Outdoor | 6

Bucket Brigade Training

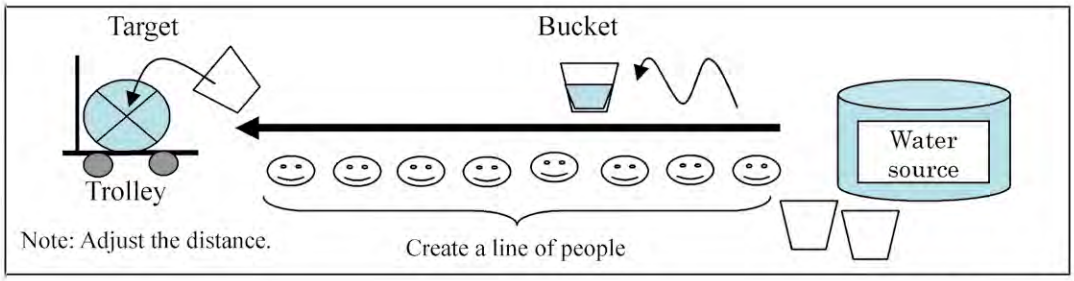
This training is designed to learn firefighting methods which can be conducted by local residents before a fire engine arrives at the site. This section explains bucket brigade methods and line arrangements of people which were used for initial firefighting at many sites during the Great Hanshin-Awaji Earthquake.

1. Objective

The participants learn about bucket brigades as an initial firefighting method in cases where portable power pumps, etc. are not available. Participants can also understand the importance of cooperation in disasters through this program as well as learning about firefighting methods.

2. Necessary Equipment and Materials

(Item)	(Quantity)
Water source (a pool, a collapsible water tank, etc.)	1
Target for bucket brigades	1 set (2 sets when holding competitions)
Trolley to place a target	1 set (2 sets when holding competitions)
Container to carry water in (a bucket, etc.)	Many (10 or more)



[Basic Example]

3. Various Training Methods

(1) Competitions

Two teams conduct bucket brigades simultaneously in a competition. Place two large plastic buckets on the trolleys as shown in the diagram above. The first team to fill the large bucket is the winner.

Watch out for accidents and injuries, because the competition method has a downside, for example participants become careless about what they are doing and they tend to forget about safety management, although it can make the training exciting.

(2) Other Variations

Anything which holds water can be used as a container besides buckets, such as washbowls, trash bins and bags.

In fact, all sorts of things which hold water were used to conduct firefighting during the Great Hanshin-Awaji Earthquake. It is recommended that a variety of things are used so that the participants realize many household products can be used to conduct bucket brigades.

In bucket brigade training, all the participants cooperate to transport water to the target. Therefore, the training program helps the participants to learn about the importance of mutual help and cooperation.

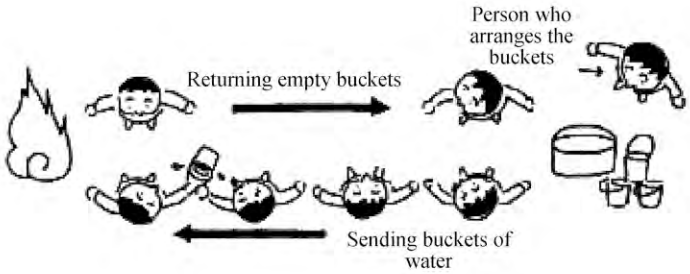
For this reason, it is a good idea to let children participate in the training.

4. Different Line Arrangements

There are different line arrangements, each of which has advantages and disadvantages. Select a suitable arrangement in accordance with the number of participants and the type of participants (such as experienced participants or not).

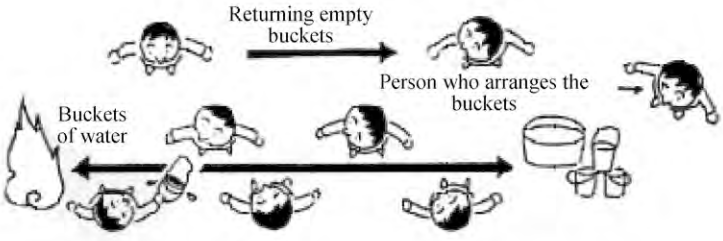
(1) One Line Relay

This is suitable when there are a small number of people.
The participants stand in one line about 1.5 meters apart, and pass buckets of water from the water source to the fire source.
About one fifth of the numbers of people in the line are allocated to take the empty buckets back to the water source.
The downside of this method is that people cannot see what is happening behind them. If necessary, allocate personnel who will watch out for the safety of the participants (for example when a line is made across a road).



(2) Relay in a Line Where People Face Each Other

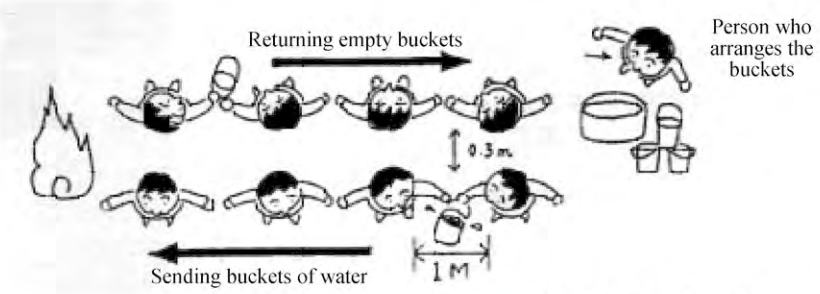
This is a modified version of the one line relay.
People stand in one line. Every odd numbered person turns 180 degrees so that they are facing in the opposite direction to the even numbered people. The odd numbered people take two steps backwards. This makes a set of people who can see between the gaps in the people facing them. They can then check to see if there are any dangers behind the people facing them.
The downside of this system is that it takes longer to arrange people into position.



(3) Relay in Two Lines

This is a suitable method when there are many participants.

The people in one line pass along the buckets of water and the people in the other line pass the empty buckets back to the water source. The two lines stand with their backs to each other, so that they can conduct a bucket brigade while watching out for each other's backs (if they face each other, it will be difficult to check safety because they block each other's view). Suitable spacing is about 1 meter. If there are not enough people, allocate members with about 1 meter spacing on the sending line and allocate the rest to the returning the empty bucket line.



(Note) The spacing is just a rough guide.

Tips for This Program

☆ Bucket brigades succeed only if many people cooperate with each other.

It is a good idea to let the participants try without being given an explanation first, so that they can experience the importance of appropriate arrangements and cooperation through their experience. Being part of a bucket brigade is hard work, and so watch out for injuries and do not let children or the elderly try too hard.

Rescue Drills

30 min. or longer | Outdoor | 7

It is needless to say that rescue operations come first when disasters occur. Some rescue methods are explained in this section.

1. Objective

At the site of a major disaster such as an earthquake, swift rescue operations are required. Therefore, the participants will learn how to handle equipment and how to conduct rescue operations in order to be prepared for an emergency.

2. Necessary Number of Staff (In the Case of about 30 Participants)

4-5 staff

3. Necessary Equipment and Materials (In the Case of about 30 Participants)

(Item)	(Quantity)
Saw	5
Crowbar	5
Jack	5
Bolt clipper	5
Hammer	5
Square timber (at least 10 cm thick)	5

4. Outline

With the scenario that a person has been trapped in or caught under a collapsed house, etc., a rescue drill is conducted using rescue equipment such as saws and crowbars.

5. Procedures

(1) Preliminary Explanation

Give the name of each equipment and material and explain its usage and how to handle it.

(2) Preparation

- Prepare the necessary quantities of equipment and materials to be used in the drill.
- Place a dummy, etc. to be rescued under pieces of timber.

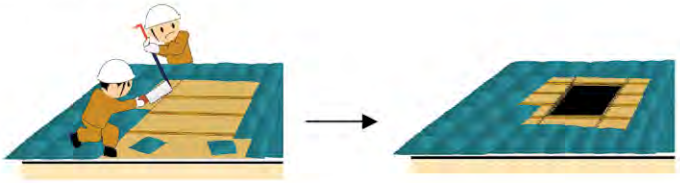
(3) Conducting a Drill

It is difficult to prepare and conduct a full-scale rescue drill. Therefore, the exercise can be limited to lifting and cutting square timber, etc. using equipment and materials, after giving an explanation of rescue operation.

(i) Explaining how to make an opening in a roof.

(How to Make an Opening in the Roof)

- In the case of a wooden-frame house, an opening is made by removing tiles and cutting or breaking roof boards along the rafters.



- In the case of a house with a galvanized iron roof, galvanized iron sheets are pulled off by inserting a crowbar into the joints of the galvanized iron sheets. Then, the roof boards are cut or broken along the rafters.
- In the case of a slate-roofed house, the slates are removed by smashing them with a hammer, etc. and then the roof boards are cut or broken along the rafters.

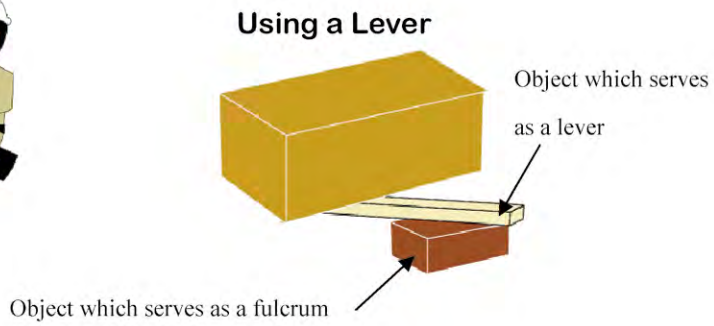
[***Points to Note for the Operation***]

☆When operating on a roof, allocate safety personnel on the other side of the roof and secure your safety using ropes, etc. Check the firmness of the footing to make sure that the roof will not collapse under your feet. Check your footing to make sure you do not fall.

☆Make a loud warning and check that nobody is below before throwing debris down to the ground.

☆During a drill, watch out for injuries such as cuts to the hands and feet.

(ii) Explaining how to rescue a person.



(Rescue Method)

- Talk to the person trapped in the house in order to reassure him/her and obtain information from him/her about the conditions inside the house.
- Use a jack or a lever to lift debris which is trapping the person.
- Support the lifted debris by inserting square timber, etc. in the space created.
- Remove or break debris, starting with the easiest part to work on.

[***Points to Note for the Operation***]

☆When removing or breaking debris, work carefully in order to prevent nearby debris from collapsing.

☆When using square timber, etc. as a support or a lever, choose the thickest piece available which has no cracks, etc.

Points to Include in the Talk to the Participants

☆Ask the participants to check if there are goods in the house which can be used for relief operations, etc.

☆Carpentry tools and jacks inside cars may be useful.

Rope Knot Tying Training

30 min. or longer | Outdoor | 8

Ropes are very useful tools in emergencies. Ropes can be used for various purposes when different knot tying methods are used. This section explains the training methods for rope knot tying.

1. Objective

The participants learn knot tying methods which are useful for rescuing people from collapsed houses, etc. in a disaster. Learning the techniques to utilize ropes can be useful in everyday life as well as in an emergency.

2. Necessary Number of Staff (In the Case of about 30 Participants)

4-5 staff

3. Necessary Equipment and Materials

Ropes (one for each participant)

4. Training Content

There are various rope knot tying methods suitable for different purposes, including tying together ropes of the same thickness and tying together ropes of different thicknesses as well as ropes made of different materials. There are also methods suitable for tying ropes to an object or the human body so that they can be lifted up or down, or ropes can be stretched horizontally or hung down.

(1) Procedures

(i) Prepare for the training session by distributing ropes to the participants. If the participants are divided into groups, each group should have a maximum of 10 participants with one instructor allocated to each group.

(ii) Explain about the handling of ropes.

- Ropes are used to save lives. Do not handle them carelessly.
- Do not wrap ropes around the neck or swing them around (this warning is particularly for children).

(iii) Give instruction on each knot tying method and ask the participants to try tying the knot.

(iv) Let the participants see examples of how the knots are used where possible (such as lowering a bag).

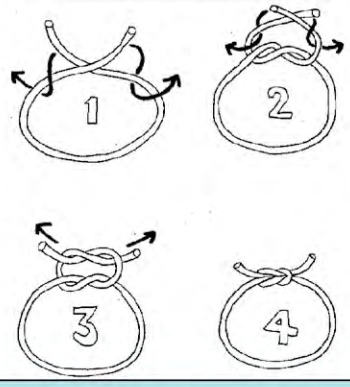
Tips for This Program

☆Typical rescue ropes used by professional fire station staff can bear a maximum weight of 3 tons (increasing the number of knots will reduce the strength of the rope significantly).

☆Even minor damage to a rope will significantly reduce its strength because a rope starts breaking from the damaged part. Tell the participants to handle the ropes carefully because they are used to save lives.

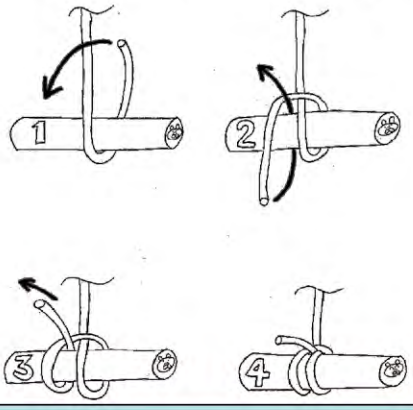
Main Rope Knot Tying Methods

Reef knot



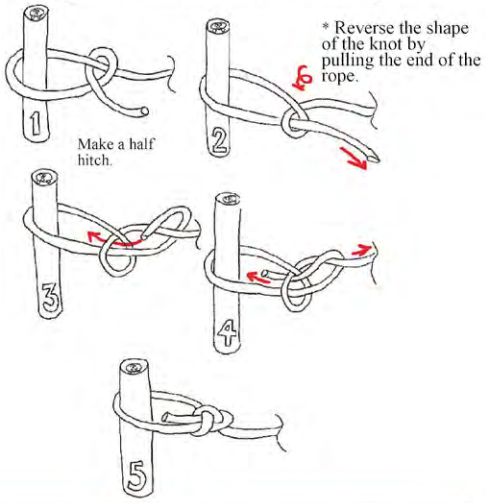
- This method is used to tie ropes of the same thickness together.
- The knot can be easily untied by pulling specific parts of the knot. Therefore, it is used by first aid crews to tie a triangular bandage, etc.
- A bow knot is a modified version of a reef knot.

Clove hitch



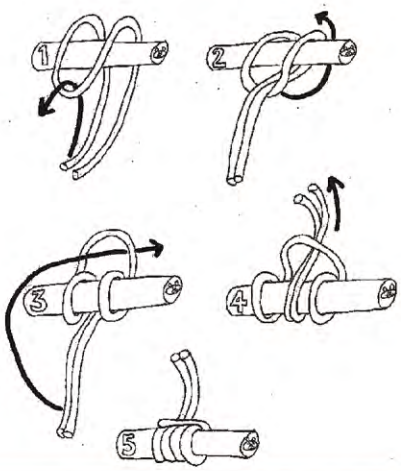
- This is a quick rope tying method for fixing a rope to an object. It is used by fire crews to prevent water-spraying hoses from sliding down on firefighting sites.
- It is used to fix ropes to all sorts of objects.

Bowline



- This method is used to form a loop. It is used by rescuers to make a lifeline for themselves, etc. at a disaster site.
- It can be used to tie a rope to a fixed object such as a tree.

Prusik knot



- This is a quick rope tying method for fixing a rope to an object.
- This method is used in similar situations as a clove and half hitch, but this is a more suitable method for tying a rope to a delicate object because this knot does not become as tight as a clove and half hitch.

Evacuation Drills

60 min. or longer | Outdoor | 9

This section explains the procedures for evacuation drills, the procedures for drills to set up and operate evacuation sites, drills for emergency accommodation at evacuation sites, etc.

1. Objective

As preparation for emergency situations, conducting evacuation drills to enable the safe evacuation of local residents and drills to set up and operate evacuation sites will ensure the safety of the community as well as providing opportunities for local residents to get to know each other.

Regularly communicating with those who require assistance will help to identify evacuation routes and the types of transportation suitable for people with different health problems. This information will be useful in an emergency.

By conducting evacuation drills in the local area, routes suitable for different kinds of transportation, the distance, the time required and the required number of helpers can be grasped and problems can be identified.

2. Necessary Number of Staff

All participants other than those who will act as the people who require assistance and evacuees will act as staff.

3. Necessary Equipment and Materials

- For transporting evacuees: stretchers, wheelchairs, hand carts/bicycle carts, blankets, etc.
- First-aid kits, AEDs (automated external defibrillators)
- For operating an evacuation site: a list of evacuees' names, writing instruments, etc.
- For an emergency accommodation drill: bedding (blankets, etc.), cardboard boxes, tools and ingredients for cooking relief meals, emergency rations, water (in PET bottles), etc.
- Road usage permit (When conducting drills on firefighting, evacuation, relief operations, etc. on a road, you may be required to obtain permission to use the road from the chief of the police station, etc.)

4. Drill Content

(1) Evacuation Drills (operated by Evacuation Guidance Team, Helpers for those who Require Assistance, Rescue Team, Relief Team, etc.)

With the scenario that a disaster has occurred, contact the representative in each block

using an emergency phone tree. Confirm the safety of households by block and write down "confirmed" in the list. Conduct rescue operations where needed. Gather at the temporary evacuation point, check the members of the group and then move to the evacuation site.

(2) Setting up of an Evacuation Site (operated by Headquarters Team, Evacuation Site Team, Relief Meal Supply Team, etc.)

Following the evacuation drill, gather at the evacuation site. At the evacuation site, collect information, set up the site and prepare to cook relief meals.

(3) Emergency Accommodation Drill (operated by Headquarters Team, Evacuation Site Team, Relief Meal Supply Team, etc.)

It is desirable that residents participate as families, but it is also good for children to participate without parents as part of disaster education. After the participants experience uncomfortable living conditions with limited food, water, bedding and space, ask them to think about what can be done to cope with the situation.

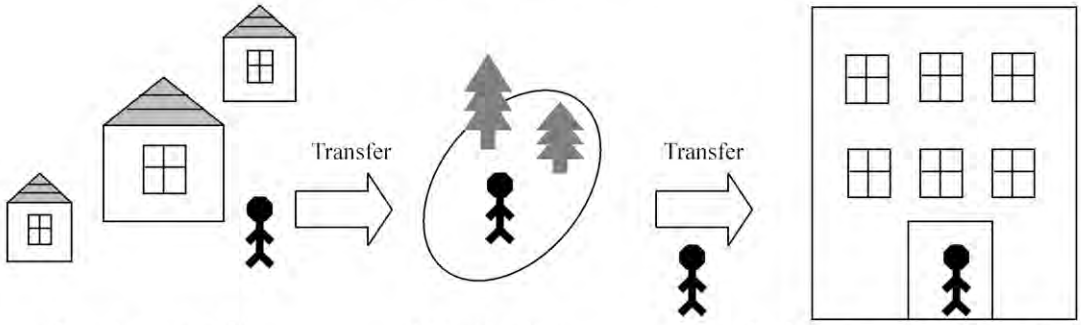
Light exercises and games can be included in the drill so that the participants can enjoy the drill. A talk on disaster risk reduction (such as a talk about an earthquake experience), a fire drill, etc. can also be held using this event.

(4) Measures for those who Require Assistance

People who require assistance are essentially expected to evacuate with the help of their family members. Transport equipment (such as wheelchairs) should also essentially be prepared by each family. When evacuation is not possible by family members alone, community members should assist them.

Understand the conditions of those who require assistance through interactions in everyday life and consider what kinds of transport equipment will be needed in an emergency (trucks and cars can be used depending on the condition of the roads, but vehicles cannot be used if roads are blocked in earthquakes).

Schematic Diagram of the Drills



Safety confirmation, rescue drill
Drill to transfer those who require assistance

Evacuation drill

Drill to set up an evacuation site
Emergency accommodation drill
Relief meal supply drill
Other emergency drills

Community (houses)	Temporary evacuation point	Evacuation site

5. Procedures (From Planning to a Review Meeting)

(1) Preparation Meeting (Creation of a Plan)

What kinds of disaster should be considered?

Which areas need to be evacuated when disasters occur?

Are people who require assistance registered? Where do people who need assistance live?

Which routes should be used for the evacuation? (Which routes are safe to use?)

Who sets up and operates the evacuation site? (Residents or a government organization?)

Where do you ask for support? (See (iii))

What programs should be included in the emergency accommodation drill?

Note: Ask cooperating organizations, etc. to attend the meeting.

(2) Allocation of Roles

Headquarters team, evacuation guidance team, helpers for people who require assistance (such as transportation), relief meal supply team, evacuation site team, rescue team, relief team, etc.

(3) Asking for Support (Cooperation is essential in order to conduct drills as a community.)

Evacuation sites such as schools (Different countries have different designated evacuation sites.)

Residents groups such as residents' associations

Government organizations

The police, fire service, the military (Ask government organizations in charge of disaster management to participate in the drills.)

Youth organizations, women's associations, volunteer fire corps, etc. (Many hands are needed both to conduct drills and in emergency situations.)

Volunteer organizations, NPOs, the Red Cross (the Red Crescent), etc.

(4) Conducting Drills

Conduct drills in accordance with the plan.

In an evacuation drill, some people arrive at the evacuation site early and others arrive late. Therefore, plan for programs which can be held while people wait for everybody to arrive.

In an emergency accommodation drill where children participate, particularly watch out for their safety and make sure that you can get in touch with their parents at any time.

(5) Review Meeting

A review meeting and the creation of review sheets (designed to identify problems) are necessary elements of the drills. Create a review sheet for each person who requires assistance if possible.

It is important to share points to be improved with everyone.

Tips for this Program

☆You can start identifying various problems as you repeat the evacuation drills.

☆Based on the past drill experiences, conduct drills at least once a year.

Points to Include in the Talk to the Participants

☆Anybody can become "those who require assistance" in a disaster. Ask people to be prepared for emergencies by fixing furniture, etc. Let them know that communication with neighbors in daily life is important.

☆A spirit of mutual support is particularly important in difficult situations.

60 min. or longer | Indoor | 10

Information Transmission Drills - Preparation for Emergencies

This section explains the procedures for developing emergency phone trees and information transmission drills in order to communicate information about the occurrence of an emergency and evacuation to the community residents.

1. Objective

An information transmission drill aims to promptly gather accurate information such as the situation in the disaster in the area, information about risks, the status of the local residents' evacuation, etc., as well as promptly transmitting such information to residents.

2. Necessary Number of Staff

2-3 staff (if the drill involves only telephone communications)

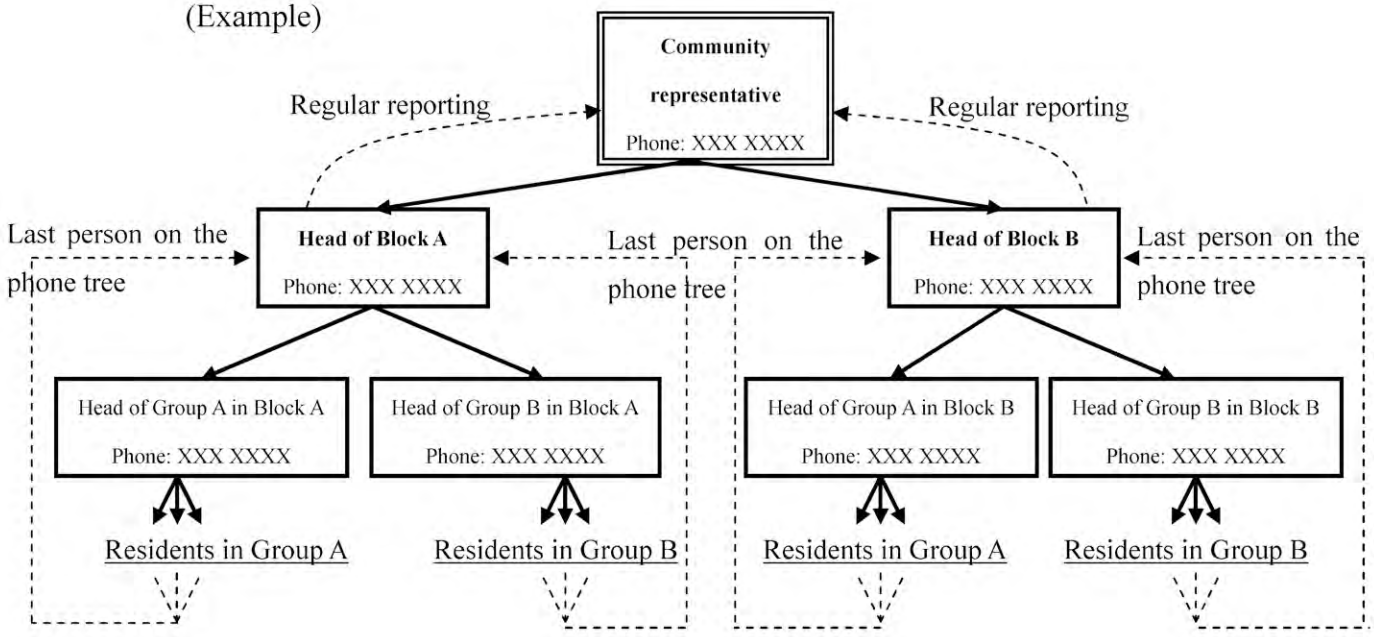
3. Necessary Equipment and Materials

Copies of the emergency phone tree diagram (one copy per participant), telephones (cell phones if available), and the town block map (1 copy)

4. Procedures

(1) Residents will have discussion in order to develop an emergency phone tree.

(Example)



* Check the location of the next house(s) to be contacted on the residential map, etc. (This is useful for a situation which requires door-to-door visits for information transmission.)
* The last people on the phone tree will report back the transmitted information and time that they received the information to the head of the block, etc.
* Discuss the above-mentioned rules and other necessary rules in advance.

(2) Decide the rough content of the information which needs to be collected.

The address of the disaster site, the target, the situation at the site, the number of injured people, the seriousness of the injuries, expected problems in the foreseeable future, the current measures, the person who reported the disaster, the number of people at the evacuation site, the status of the evacuation, etc.

* Remember to make notes when gathering information.
* Plan for information transmission methods which do not rely on telephones (such as radio, walking, using information transmission personnel, etc.) by taking into consideration the areas where telephones cannot be used or situations where calls cannot be connected due to difficulties caused by the disaster.
* Try gathering information about people, for example what kinds of people are in trouble in the community, in addition to the status of the disaster.
However, handling personal information needs great care. Discuss who should be allowed to see the information in advance.

5. Method for an Information Transmission Drill

(1) Provide the simulation information. (E.g.: An evacuation advisory was issued for Block ○○ and Block XX at XX: XX, since there is a risk of collapse of the banks along the XX river due to heavy rain. Those who live in the area are advised to evacuate to the XX elementary school.)

(2) Transmit the information using the emergency phone tree in the area. If the person who is next to you on the phone tree did not pick up the phone (because he/she was out, etc.), phone the person next to that person on the phone tree, and tell him/her that you could not get in touch with that person. This information should then be passed on to the last person.

(3) Check how accurately the simulation information was transmitted. In the case of the example of an emergency phone tree shown above, the last people on the phone tree will report back to the head of the block the information they received, the time when they received the phone call and the information about the people who could not be contacted.

(4) The heads of the blocks will report to the community representative regularly (e.g. every 10-20 minutes) the number of people who were contacted and the names of the people who could not be contacted.

(5) Stop the exercise when the time is up (the finish time should be decided in advance). The community representative will aggregate the results, present the results at a later date and discuss with residents if there are any points to be improved.

Tips for This Program

☆If there are local media in your community such as a community radio station or a local television station, they may be used as a means of transmitting disaster information.

Set up an opportunity for residents' groups, government organizations and the media to discuss together how they can cooperate with each other.

Points to Include in the Talk to the Participants

In an emergency situation, people may not understand the situation they are in and, in combination with human psychology which tries not to recognize danger until the danger is right in front of them, they may convince themselves that it is nothing serious. This state of mind is known as the "normalcy bias" in academic terms. It will be important for you as the members of the community based voluntary organizations for disaster risk reduction which ensure community safety to transmit information about dangerous situations correctly to the residents.

The following is a list of points to keep in mind for correct information gathering and transmission. Please share this with the participants of the drills as the information to be used in emergencies.

1. Confirm the facts and report them at the right time.
2. Share information with organizations responsible for disaster risk reduction such as municipalities and fire service organizations.
3. Transmit information using simple words and avoid using difficult words.
4. Try giving information not only orally but also in writing (a note).
5. Ask the recipient of the information to repeat the content in order to transmit the information correctly.
6. Messages in emergencies often include numbers. Be particularly careful when transmitting information about numbers.
7. Reporting that there are no particular problems is also important information.

Community Safety Map

120 min. or longer | Outdoor | 11

This section explains about walking in the town to investigate the items to be included on a safety map and how to create a map.

1. Objective

The participants walk in the town to investigate where disaster risk reduction facilities and hazardous sites are located in their community and create a safety map which can be used in emergencies.

2. Necessary Number of Participants

10 or more (no limit in the number of participants)

3. Necessary Equipment and Materials

Paper or base map (if available)	1 per group and 1 for a final version
Writing instruments	1 per participant (if not possible, 1 set per group)

[Notes]

Essentially, any number of people can participate. It is recommended that participants are divided into groups if there are many participants.

It is better to have more participants so that they can find hazardous sites, etc. from various angles and points of view.

4. "Town Watching"

(1) Ask the participants to meet in one place. Decide on which routes and which area to investigate. If participants are divided into groups, decide on the roles of members within each group (the person who takes photographs, the person who fills in the information on the map, the person who checks the safety of the participants, etc.).

Distribute pieces of paper (base maps) and writing instruments to the participants so that the information can be written down and compiled later.

(2) Once everybody is ready, start investigating the area. Take your time when walking

around and observe the area from various angles and points of view.
Note: Please see the "Tips for This Program" section below.

(3) After completing the investigation of the area, summarize the information which has been written down for each type of item. If the investigation was conducted in groups, you can ask each group to present their findings to the other participants.

(4) Finally, compile the investigated information and complete the map.

Tips for This Program

☆ The following are some of the items to check when investigating the town.

- Disaster risk reduction storehouses, pools, fire hydrants, fire cisterns, etc. (useful things)
- Households which have radio sets, loudspeakers installed outside, notice boards, etc. (places where people can obtain information)
- Supermarkets, petrol stations, toilets, etc. (useful places)
- Hospitals, clinics, pharmacies, places where AEDs are installed, fire stations, police stations, etc.
- Evacuation sites, schools, parks, open spaces, car parks, etc.
- Hazardous sites and objects (including accident black spots)
- Other useful things and places (ask the participants to think about other useful things and places).

Note: It is recommended that necessary information is also collected from the viewpoints of children and the elderly.

5. Creation and Distribution of a Map

(1) After the participants bring back the information that they collected and the necessary information is put on a large base map, print it out and distribute copies to the people in the area and put them up in the area.

Sharing the information with the community residents can provide an opportunity for the residents to consider how useful community assets can be utilized and what countermeasures should be taken for hazardous sites, and to take action accordingly.

Residents can, of course, also take action using the information on the map when a major disaster occurs.

(2) The map is not useful if the area covered by the map is too small or too large.
In general, creating one map per area covered by an evacuation site (one school district in the case of Kobe) is recommended because it will be a useful map when evacuating.

(3) It is recommended that residents walk in the town together to update the map once a year.
This will raise the awareness of community residents about disaster risk reduction.

[Notes]

In addition to creating a safety map of a local area, it is also a good idea to create a safety map of a school compound or a large-scale apartment compound.

If community members with a wide variety of ages (from children to the elderly) can participate in the activities, the resulting map will have more various kinds of useful information on it, because the area can be observed from various different viewpoints.

Points to Include in the Talk to the Participants

☆ Ask the participants to have a discussion with their family members about hazardous sites in the local area and about disaster risk reduction at home.

☆ Each family should discuss among themselves the evacuation route and the evacuation site to be ready for an emergency.

Community Safety Map

(Column for Reference) Kobe City's Community Based Tsunami Hazard Maps

Kobe City, in cooperation with Disaster-Safe Welfare Communities in the City, is working on the preparation of community based tsunami hazard maps that cover its entire city area.

As a measure against flood damage, for instance, preparation of tsunami hazard maps not only showing the locations of evacuation shelters with simple color-coding based on the predicted depth of inundation, but also indicating evacuation behavior appropriate for local characteristics is effective for making local residents aware of flood risks on a daily basis and enabling them to behave correctly in their evacuation in a tsunami disaster.

Integrating (1) basic information about flood risks expected from the local history of disasters and geographical conditions with (2) evacuation information rooted in the local situation of evacuation sites and hazardous locations will lead to the development of highly-practical tsunami hazard maps in consideration of evacuation behavior recommended in a time of disaster.

<Steps in a Series of Disaster Risk Reduction Map Building Workshops>

Workshop	Program	Points to be checked
1st (Preparation of a draft map)	1. Explanation of local disaster risks • Past disasters and their scale of damage • Disaster risks expected from geographical features	Explain historically and archeologically recorded local disasters.
	2. Draft map building workshop • Grouping residents by blocks • Adding necessary information to the map 1) Checking tsunami damage controlled areas and marking them on the map 2) Checking residents' homes and marking them on the map 3) Marking evacuation sites on the map 4) Reviewing evacuation routes 5) Predicting potential risks during evacuation along the routes	Residents become aware for the first time when they mark hazardous areas on the map by themselves instead of leaving this work to the City.

	3. Presentation of the contents • Making a presentation by community block	Carefully check for any discrepancy in fact relevance between residents and the City.
2nd (Town walking, revisions to the draft map)	1. Walking around the town with the draft map prepared in the 1st workshop in hand to check for disaster information to be added. • Geographical information (steps, slopes, etc.) • Locations to be warned of during evacuation • Blind spots • Risks for inundation • Places likely to cause a landslide	• Check for locations that may hamper evacuation in a disaster (e.g., areas under an overpass, underground passages, bridges, railroad crossings, narrow roads). • Do not miss detailed information known only to local residents (e.g., gutters likely to overflow in a heavy rain).
	2. Adding to the map information obtained from the town walking.	First, through a brainstorming session, write out all information obtained. Then, pick out information to be added to the map.
	3. Presentation of the contents; revisions to the draft map	Carefully check for any discrepancy in fact relevance between residents and the City.
City officials in charge prepare and print a hazard map based on the results of the 1st and 2nd workshops, and bring the map to the 3rd workshop.		
3rd (Checking of the printed final version, corrections)	1. Final check of the contents	It is important to make a map that is eye-friendly and convenient for local residents to obtain information.
	2. Presentation of the contents	Finish the workshop series by calling on residents to: 1) Introduce the completed map to their families; and 2) Conduct drills in their home and community using the completed map.

Once a disaster risk reduction map is completed, try to use the actual map in a drill.

As an example, the next page presents a map built through workshops as explained above. Check how the viewpoints of residents are reflected in the map as information.

< People Participating in a Workshop Held in Kobe>


Wakamiya District Disaster-Safe Welfare Community Tsunami Hazard Map
Head North beyon
Keep away from Myohoji River. A using a JR unde possible.
Legends
Height above sea level / a.s.l. (annual mean level at low and high tide; altitude)
Disaster reduction machinery and materials storage
Outdoor speaker for disaster management radio system
Crossing
Underground passage
Overpass
Public phone
Emergency tsunami shelter
Conv. store
Volunteer fire corps base
Underpass
Tsunami damage controlled area (provisional): Pale blue zone
* To ensure greater safety, this hazard map is built based on the tsunami damage controlled area (provisional) set by Hyogo Prefecture in Oct 2011, though it published a simulated Nankai Trough mega quake tsunami inundation map in Feb 2014.
* Note that tsunami damage may expand beyond the area border depending on earthquake scale and other conditions.
Tsunami alerting line
The maximum tsunami height in Suma Ward is estimated at 3.6 meters. The pale blue zone indicates the area of land not higher than 3.6 meters above sea level.
Volunteer fire corps base
5th Squad base
JR Underpass may be flooded
JR Underpass may be flooded
MaxValu
9.5 m a.s.l.
Overpass
6 m a.s.l.
Suma Kaihin-koen Sta.
Public
Shinsu
Crossing
Crossing
3.2 m a.s.l.
Footbridge
National Route
5 m a.s.l.
To Seapal (Emergency tsunami shelter)
Suma Aqualife P
Seapal (Emergency tsunami shelter)
Outdoor speaker for disaster management radio system
Outdoor speaker for disaster management radio system
N
1 : 2,500
0 50 100 200 300 400 500m


d JR Line during Evacuation
void
rpass if
Myohoji River
Outdoor speaker for disaster management radio system
10.2 m a.s.l.
JR Sanyo Main Line
JR Takatori Sta.
Underground passage
7.7 m a.s.l.
In front of JR Takatori Sta.
Apply this map to a visible place (e.g. refrigerator door).
6.9 m a.s.l.
Disaster reduction machinery and materials storage
5.6 m a.s.l.
Nagaracho 4 intersection
4.9 m a.s.l.
Takatoricho 1 intersection
Super Maruai
4.6 m a.s.l.
Disaster reduction machinery and materials storage
Disaster reduction machinery and materials storage
phone
ma Hospital 1st ward
ublic phone
insuma Hospital 2nd ward
Footbridge
3.9 m a.s.l.
Volunteer fire corps base
4th Squad base
消
bridge
2
2.4 m a.s.l.
3.5 m a.s.l.
There are many gasoline tanks.
ark
Myonoji River
Outdoor speaker for disaster management radio system
The first tsunami is expected to arrive about 85 minutes after the earthquake occurs.
A series of tsunamis will come in succession!

Flood Control Drills - Be Prepared for Floods

60 min. or longer | Outdoor | 12

There are other kinds of disasters besides earthquakes. This section explains how to act in cases of floods and typhoons, as well as the methods for flood control drills.

1. Creation of a Hazard Map

When creating a "hazard map" which was explained in Program 11, identify water disaster prone sites in the local area (landslide prone sites, flood-prone roads, river flood-prone sites and sites prone to other types of floods in the case of heavy rain).

Pay attention to weather warnings and earthquake information on the radio, etc. and evacuate right away as soon as you find it too dangerous to stay.

Conducting drills regularly based on Program 9 "Evacuation Drills" and Program 10 "Information Transmission Drills" will help you to remain calm when an emergency occurs.

Tips for This Program

☆ You can create a "flood hazard map" specifically designed for flood situations, which includes potential places where banks might collapse or rivers might flood, other flood-prone sites, evacuation sites on hills, etc.

☆ Pay attention to information on the radio, etc. such as weather warnings and earthquake information. Prepare "emergency kits" which can be taken with you in emergencies.

2. Conducting a Flood Control Drill

(1) Objective of Flood Control Activities

Flood control activities by community residents and volunteer fire corps are undertaken to prevent floods and mitigate damage caused by water leakage and collapsing banks, using different flood control methods. It is important to be well prepared, acquire skills and collect information for flood control activities before an emergency occurs.

(2) Conducting a Flood Control Drill

When conducting a flood control drill, receive guidance from government staff such as fire station staff and members of volunteer fire corps, and encourage as many residents as possible to participate in the drill.

(3) Content of a Drill

(i) Observation (water levels, precipitation, wind velocities)

(ii) Reporting (mobilization of volunteer fire corps)
(iii) Transportation (equipment and materials, personnel)
(iv) Various flood control methods
(v) Evacuation (evacuation of residents in danger zones)

Tips for This Program

By conducting other programs such as "Evacuation Drills" and "Information Transmission Drills" in combination with this program, the drill can better simulate a real disaster situation.

(4) Various Flood Control Methods

There are many flood control methods suitable for different types of floods (such as water leakage from the ground, cracks in or collapse of levees, river banks overflowing, etc.), some of which are difficult for nonprofessionals to conduct. In general, sandbags can be made and stacked to prevent water from flooding or levees from collapsing. Receive guidance from specialized agencies such as fire service organizations and the military.

Sandbag Stacking

(Stack sandbags and fix them with iron stakes)

How to Drive in a Stake

(Put a shovel handle through a stake)

Sandbag Stacking with a Tarpaulin Wall

(Vertically spread a tarpaulin on the river side of the sandbags stacked in the above-mentioned way)

Sandbag Stacking in a "Stepped Pot" Shape

(Surround a water leakage point on the ground with sandbags)

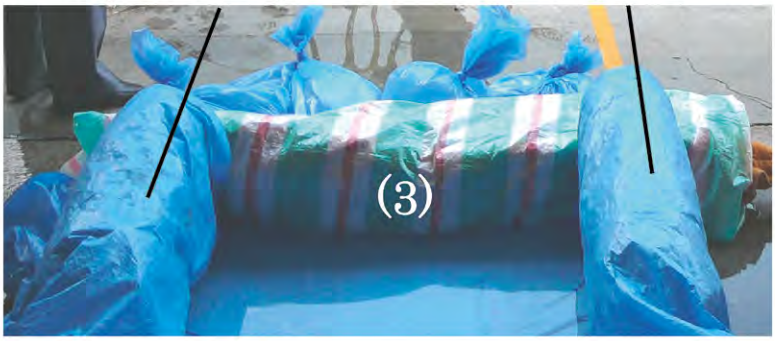
[Simple Flood Control Methods]

These methods can be used at the initial stage of flooding when water levels are still low, by utilizing materials available at home.

(1) Fill bags with water, place the bags in cardboard boxes and wrap them with tarpaulins.

(2) Wrap plastic containers with tarpaulins.

(3) A simple flood control method using planters



Bag of water

(5) Preparation for the Drill

There are many types of equipment and materials used in flood control.
Check if you have all necessary equipment and materials including large wooden mallets, saws, shovels, axes, tarpaulins, wooden stakes, ropes, etc. Learn how to use them in normal times.

(6) How to Make a Sandbag

A. Necessary Equipment and Materials

Empty sandbags

Shovels

Iron stakes, wooden stakes

Hammers, large wooden mallets

B. How to Make a Sandbag

- Put 6-7 shovels of earth (30-40 kg) into an empty sandbag.

Put shovels of earth in a bag and pull the string to tie the top.

Hook the string on a finger to make a loop. Put the string around the top of the bag 2-3 times. Put the string through the loop and pull it to fasten.

C. How to Lift a Sandbag

Place the sandbag on the lap.

→

Put the sandbag on your shoulder…

→

…Then, stand up.

- You can also use wheelbarrows to carry sandbags.

Note: Be careful not to injure your back, etc. when lifting heavy objects.

Points to Include in the Talk to the Participants

Identify flood prone areas, etc. to be ready for a disaster.

Discuss among family members where the evacuation site is, which route should be taken to evacuate, etc.

If you are near the sea when an earthquake strikes, evacuate to higher ground right away.

Conducting Drills in Combination with Community Activities

13

By conducting disaster risk reduction activities in combination with other community activities, it is expected that many people will participate in the activities and this can raise awareness of more people in the community about disaster risk reduction.

1. Objective

Through integrating the elements of disaster risk reduction activities in other community activities, various kinds of people can gain the opportunity to learn about disaster risk reduction.

When it is difficult to conduct disaster risk reduction activities independently, using other community activities can reduce the time required for planning and financial costs.

2. Necessary Number of Participants

The number of participants can be adjusted in accordance with the activity content.

3. Necessary Equipment and Materials

Necessary equipment and materials should be decided in accordance with the activity content.

4. Examples of Cooperation

(1) Integration into Welfare Activities

- Integrate disaster risk reduction activities into gatherings for the elderly of a community, for example, providing information about disaster risk reduction (lectures on disaster risk reduction such as a talk about an earthquake which happened in the past, information with regard to residential fire alarm systems, anchoring furniture, etc.).
- By taking advantage of volunteer activities where community residents gather (such as weeding and cleaning ditches), it will be possible to conduct an emergency drill or provide information about disaster risk reduction. This can provide a chance for those who cannot participate in disaster risk reduction activities to learn about disaster risk reduction.

Welfare activities + **Disaster risk reduction activities**

(2) Integration into Community Events

- Provide information or conduct an emergency drill in community events such as a summer festival, a music festival or a Christmas party.
- Create a booth for a game to hit targets using water fire extinguishers at a community festival.
- Raise awareness of people by performing a fire drill or a bucket brigade during the half time at a community soccer event, etc.

Community events ＋ **Disaster risk reduction activities**

5. Procedures

(1) Discuss community activities and events into which disaster risk reduction activities can be integrated.

(2) Look up the organizers of the activities and the events, and consult with them to coordinate the content.

(3) Ask for advice from the fire station about training programs suitable for the situation.

(4) Conduct the disaster risk reduction activities.

*** Examples in Japan(KOBE)**

(1)Conduct a game which integrates an element of disaster risk reduction as part of the sports day events at a school.



(2) Conduct disaster risk reduction programs using a community summer festival.

Tips for The Program

☆ There are events for which government organizations cannot provide support as part of their duties (such as dispatching a fire engine or government staff) depending on the content and purposes of the events. If assistance from government organizations is needed, consult with them about the content of the event, etc. at the planning stage.

☆ Adding disaster risk reduction activities to community events which attract many people can provide opportunities for the community to improve their disaster risk reduction abilities. Discuss what kinds of activities can be conducted in the community. Also, consult with government organizations to find out what kinds of support are available.

Points to Include in the Talk to the Participants

☆ Many community activities and events are season-specific. There is perhaps more chance that participants will take home the information they have learned, if you can provide information about disasters which tend to occur in the relevant season.

[E.g.]

Spring: Talks about forest fires (in relation to barbecues)

Summer-Autumn: Windstorm and flood damage (in relation to the rainy season and typhoons), water-related accidents (in relation to summer holidays)

Winter: Talks about fires (in relation to the dry air)

Panduan Output Pembelajaran Kebencanaan, UNICEF.

Section 8. Disaster Risk Reduction Education: Learning Outcomes

The global picture of disaster risk reduction curriculum provision reveals a failure to engage comprehensively with the question of learning outcomes. Learning outcomes are heavily weighted towards knowledge with little attention given to skills and attitudes. A comprehensive enumeration of learning outcomes is a prerequisite of quality DRR education.

In their review of the documentation and development of the case studies, the researchers encountered no comprehensive list of DRR-related learning outcomes. Lists of outcomes connected to specific subject-based courses are in evidence in a few cases, usually couched in the lexicon of the carrier subject and informed by the prevailing learning outcome expectations of that subject. Brief lists of broadly formulated learning outcomes can also be found. What comes across in the case studies is a hazy global picture in which no internationally agreed upon taxonomy of disaster risk reduction learning outcomes is discernable.

An analysis of the learning outcomes featured in the *Learning Outcomes* and *Competencies* sections of the thirty case studies reveals a heavy predominance of knowledge-based outcomes. The level of ambition mostly stops at *knowledge*. *Skills*-based learning outcomes feature in the literature and case studies but are often restricted to practical skills that fall short of preparing students to realize the ambitions laid out for DRR in education, such as engagement in community action. Throughout the study it becomes clear that treatment of learning outcomes addressing *attitudes* or *dispositions* is tokenistic. There may be a passing nod to, say, 'respect' but little else. Across the field, there is confusion concerning what are knowledge, skills and attitudinal outcomes.

The researchers had previously decided to prepare lists of generic and hazard-specific learning outcomes. The latter quickly appeared suspect not least because multi-hazards are present in many different contexts; thus, after due consideration, only a generic list was produced, a list that can easily be converted to the hazard-specific if required. It is the researchers' view that there are knowledge/understanding, skills and attitudinal/dispositional learning outcomes that are generic to the entire DRR in the education field. These, as they see them, are set out below.

The knowledge and understanding section of the list more or less follows a classic concentric circles model with local and community knowledge and understanding outcomes extending to national, regional and global outcomes. While linear, the list should be read systemically, with the local conceived of as part of the global and the global manifest in the local. Similarly, skills outcomes are organized on a continuum ranging from cognitive to affective to action with a final systemic skills section partially intended to signal that the development of all skills are inextricably linked. The attitudinal and dispositional learning outcome section retains an arbitrary element in its organization in that attitudes and dispositions, even more than skills, blend into each other and are not, in the final analysis, divisible.

The learning outcomes include both the disaster specific and the more general consequences. For example, there is a knowledge and understanding outcome that 'learners know of disaster-vulnerable local spots and populations' while there is another call for learners to understand ecosystems and understand that 'the reverberations of environmentally unfriendly behaviours will work through the system to harm humans'. This mix is predicated on the idea that there are immediate and also more profound or sub-structural dimensions to disaster risk mitigation. In this example, being familiar with disaster-vulnerable locations and populations is of vital and immediate importance to students and their communities while fostering understanding of the human impact upon ecosystems

Section 8. Disaster Risk Reduction Education: Learning Outcomes

and consequent eco-systemic impacts on human society is of potentially transformative and long-term benefit in curtailing the escalating incidence of disaster.

A number of the skills and attitudinal/dispositional learning outcomes in the list can be construed as DRR-related expressions of what constitutes a sound education for the twenty-first century. There are clear linkages between a comprehensive disaster risk reduction education and quality education (Aguilar & Retamal, 2009; Anderson, 2010).

The process of developing the list is described by the researchers as a 'mapping and gapping' exercise. General and case study literature was scrutinized for explicit or implicit learning outcomes. Gaps in learning outcomes and how they were filled were then examined in detail. The list is thus more than a reflection of DRR-related learning outcomes. It is reflective of what learning outcomes ought to be present given the ambitions of the field. It is also aspirational and, as such, provocative.

Knowledge and Understanding

Knowledge of self and others

- Learners understand their personal roles and responsibilities in times of hazard and disaster
- Learners know their personal needs, concerns, hopes, aspirations, fears and preferred futures concerning hazards, disasters and disaster risk reduction
- Learners have an understanding, grounded in practice, of personal attributes and competencies they can each call upon in times of hazard and disaster
- Learners know of the special contribution that women in the community can make before, during and after a hazard has struck, and the particular roles they can play in social organization.

Knowledge of hazards and disasters

- Learners know of the causes and effects of various hazards and disasters (e.g., earthquakes, drought, floods, tsunamis, landslides, volcanic activity)
- Learners know of past local disasters
- Learners know of locally and bio-regionally specific hazards and potential sources of disaster
- Learners know of disaster-vulnerable local spots and populations
- Learners know of the seasonality of particular hazards
- Learners have a knowledge of local, national and global hazard and disaster trends

Understanding of key disaster risk reduction concepts and practices

- Learners understand key disaster risk reduction concepts (e.g., hazard, disaster, emergency, risk, risk reduction, vulnerability, resilience), their application to specific hazard circumstances, and their concrete applications in the local community
- Learners understand that disaster risk multiplies with the intensity of the hazard and the level of environmental and social vulnerability but that it can be reduced according to society's capacity to cope (see equation, p.20)
- Learners understand the idea of a 'culture of safety' and how it applies to everyday personal and community life
- Learners understand the economies of disaster risk reduction and the cost-effectiveness of forestalling disaster
- Learners have a practical understanding of key DRR practices (e.g., hazard mapping and monitoring, early warning, evacuation, forecasting)

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Mullaitivu, a town in the Northeastern Sri Lanka ravaged by the tsunami of 26 December 2004. Toys and pictures lying in the debris of what was once a school.

Knowledge of basic safety measures

- Learners know of precautionary, safety and self-protection measures to be taken before, during and after a disaster by their family, at community level, and at school
- Learners know of warning systems in place to alert people to impending hazard
- Learners know of first aid procedures

Knowledge of disaster management mechanisms and practices

- Learners know of local, regional, national and international disaster response infrastructures and mechanisms
- Learners know the roles and responsibilities of local, regional and national government, as well as of private and civil society sectors, before, during and after times of disaster
- Learners know of locally-valued indigenous disaster risk reduction and disaster coping behaviours and mechanisms

Knowledge of the environment and of the environmental/ human society interrelationship

- Learners understand the idea of an ecosystem, how humans are actors within ecosystems, and that the reverberations of environmentally unfriendly behaviours will work through the system to harm humans
- Learners understand the specifics of how human behaviours and practices can harm the environment
- Learners know of environmental issues impacting on their community; their causes, effects and amelioration
- Learners know of local and global examples, of how damage to the environment aggravates the incidence and severity of hazards
- Learners understand the meanings and principles of conservation and know of practical conservation measures in their locality
- Learners understand the concept of sustainable development and know of concrete and practical ways of living sustainably (including sustainable usage of land and natural resources)
- Learners understand the negative interface between sustainable development and disaster

Knowledge of climate change

- Learners understand the difference between 'weather' and 'climate'
- Learners understand the dynamics of climate change
- Learners understand that climate change is generally human induced and they can identify patterns of behaviour, practices and lifestyles that are causing the climate to change
- Learners understand that climate change is exacerbating the incidence and severity of disasters
- Learners know how to apply climate change learning to their own lives and to patterns of behaviour in their community

Knowledge of differential and disproportionate impacts of hazards on people

- Learners understand how and why disasters can be devastating for some communities while others are left relatively unscathed
- Learners understand the concept of climate injustice, i.e., that climate change is falling disproportionally on those least responsible, and know and understand proposals for 'climate justice'
- Learners understand that children are often especially affected by disaster
- Learners understand that disasters have differential impacts according to gender and socio-cultural status

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Knowledge of the conflict/disaster risk reduction interface

- Learners understand that personal or direct violence and structural or indirect violence (i.e., violence built into social structures and mores) can both cause and exacerbate disaster
- Learners understand that climate change and other looming and imminent hazards can trigger violent conflict, and know about mechanisms and processes, interpersonal and international, for managing conflict and pre-empting violence

Knowledge of human rights/child rights aspects of disasters

- Learners know of internationally agreed upon human and child rights and their implications for and applications in disaster scenarios
- Learners know of rights likely to be curtailed and undermined by disasters, including the rights lost through disaster- and environment-triggered migration
- Learners know how to apply a rights and responsibilities lens to disaster risk reduction and mitigation measures and procedures

Skills

Skills of information management

- Learners have the ability to gather, receive, express and present information on disaster risk reduction
- Learners have the ability to classify, organize and sequence information gathered on disaster risk reduction
- Learners have the ability to determine the quality, probable accuracy, appropriateness, provenance, soundness and priority level of information received on disasters
- Learners have the ability to research and devise hazard maps and conduct vulnerability assessment

Skills of discernment and critical thinking

- Learners have the ability to discern and interpret signs and signals of impending hazard
- Learners have the ability to assess the level of danger presented by impending hazards
- Learners have the ability to think creatively and divergently and to move beyond their established frameworks of reference in response to changing environments and emerging and evolving threats
- Learners have the ability to think creatively and laterally so they can identify and facilitate opportunity within crisis
- Learners possess the skills to pre-empt and circumvent threat and hazard through effective information management, thinking outside the box and relying on intuition
- Learners have the ability to make ethical judgments about present and looming disaster situations
- Learners have the ability to decode, deconstruct and learn from spoken, written and visual media information about hazards and disaster

Skills of coping, self-protection and self-management

- Learners have the practical skills required for them to take all necessary measures for personal safety and self-protection before, during and after a disaster
- Learners have the skills required to collaboratively undertake hazard mapping and vulnerability assessment exercises
- Learners possess first aid and other health-related skills

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In the aftermath of the tsunami of 26 December 2004. Destroyed homes in Galle.

Skills of communication and interpersonal interaction

- Learners have the ability to communicate warnings of impending hazard clearly and effectively
- Learners have the ability to communicate what they have learnt about hazards and disasters to families and members of the community
- Learners can communicate messages about risk, risk management options, environmental protection to family and community members, and can receive messages through careful listening
- Learners have the ability to engage in dialog and discussion with peers, teachers, family and community members about hazards, disasters and disaster risk reduction, expressing opinions, feelings and preferences firmly but constructively and respectfully
- Learners have the ability to communicate effectively about disasters and disaster risk reduction with people from different socio-cultural backgrounds
- Learners have the ability to build and maintain the trust required from family, school and community that will enable them to play a part in disaster risk reduction
- Learners have the ability to work collaboratively and cooperatively with others towards reaching disaster risk reduction goals
- Learners have the skills to negotiate to mutual satisfaction with others and manage conflict productively as they work towards disaster risk reduction
- Learners have the ability to communicate disaster risk reduction messages using appropriate and creative modes of communication (e.g., brochures, arts, music, song, theatre, puppetry, posters, poems, social media, radio, film)

Skills of affect (responding to/with emotion)

- Learners have the ability to work through and express their emotional responses to threat and disaster openly and effectively
- Learners have to ability to listen to, receive and empathize with the emotions felt and expressed by others
- Learners have the ability to empathize with those threatened by hazards and harmed by disaster

Skills of action

- Learners have the ability to make informed action decisions based on data available, observation, dialog and discussion and intuition
- Learners have the ability to work alone and/or with others in school and community contexts to effect change towards sound disaster risk reduction practices and behaviours
- Learners have the ability to campaign for sounder disaster risk reduction measures using electronic and traditional media, drama performance, art, petitioning, lobbying and engaging in public forums in which ideas are shaped and shared and decisions made
- Learners have the necessary skills set to implement precautionary and safety measures against hazard in the classroom, school, home and community
- Learners have the necessary skills to be able to assist victims and the vulnerable in case of disaster (e.g., first aid skills, rescue skills)
- Learners have the skills necessary for participating in early warning and evacuation drills
- Learners have the skills necessary for emergency responses in times of hazard (e.g., light search, swimming, evacuation and creating an emergency shelter)

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Systemic Skills
- Learners have the ability to perceive relationally and identify interrelationships and interactions within ecosystems and between nature and human society, between eco-systemic well-being (or lack thereof) and community well-being and development (or lack thereof)
- Learners have the ability to identify patterns, commonalities and relationships between different hazards and risks as well as different prevention and response mechanisms

Attitudes/Dispositions

Altruism/valuing
- Learners recognize the intrinsic value of nature and wish to help protect their natural environment
- Learners recognize the intrinsic value of human life and of their community and wish to help protect all from harm
- Learners show a willingness to be involved in voluntary community activity
- Learners value and wish to protect the special place in which they live
- Learners value the global community of humankind and the planet earth

Respect
- Learners respect the diversity of perspective and opinion on disaster risk reduction in their community
- Learners respect the special contribution that all can make to disaster risk reduction
- Learners respect the rights of others in their concern for disaster risk reduction

Compassion, care and empathy
- Learners feel care and compassion for those threatened or affected by disaster
- Learners commit to an ethic of mutual help in times of hazard and disaster
- Learners approach disaster risk reduction from an ethic of caring for future generations

Confidence and caution
- Learners appreciate the need to follow safety rules and procedures on any occasion
- Learners apply a precautionary principle and risk awareness in their daily decision making and behaviour
- Learners feel confident, empowered and resilient enough to cope with disasters

Responsibility
- Learners embrace a sense of responsibility to help protect themselves, their peers, their family and community from hazard and disaster
- Learners embrace a 'responsibility of distance' to those living far away who are beset with threat and disaster

Commitment to fairness, justice and solidarity
- Learners commit to fairness and justice as the basis on which relationships between individuals, groups and societies should be organized
- Learners commit to a stance of solidarity with those who are affected by natural disasters in their own and other societies

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A Congolese girl concentrates on her assignment in a half finished class room at the Mugosi primary school close to the Kahe refugee camp in the north eastern part of the Democratic Republic of Congo.

Harmony with the environment

- Learners embrace an ethic of care, kindness and respectfulness towards living things
- Learners acknowledge the specialness, beauty and fragility of nature and embrace an ethic of environmental protection and conservation

The above list of generic learning outcomes offers a way of to develop what a graduate from a through-the grades and across-the-curriculum exposure to disaster risk reduction should optimally know and understand, have the capacity to do and have internalized as a set of attitudes and values. In any context the list needs to be broken down and reconstituted according to appropriate subject area(s) without losing sight of the whole curriculum learning outcomes picture. Each learning outcome also needs to be recast as a succession of finely tuned age- or grade-appropriate renditions that, cumulatively, lead the maturing learner towards the full realization of the generic outcome[12]. In some cases this will be a matter of applying the learning outcome to a wider arena of experience and engagement through the grades. In some cases; the notion of curriculum foreshadowing will come into play, i.e., the idea that student should optimally internalize a simple idea or concept at one age or level so as to internalize a more complex idea or concept at a subsequent age or level more easily. Four indicative examples of learning outcome progression are given in Table 6.

[12] The age ranges used in Table 7 broadly align with the development stages of the child (see, for example, Vialle, W.Lysaght, P & Verenikina, I. (2002). *Handbook on Child Development.* Tuggerah NSW: Social Science Press).

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Table 6. **Four Indicative Examples of Learning Outcomes Progression**

Generic outcome: *Learners understand key disaster risk reduction concepts, their application to specific hazard circumstances, and their concrete applications in the local community*	
Ages 4-7	Learners understand ideas of risk, danger and safety and are aware of hazards in the classroom and at home, and ways of being careful and staying safe
Ages 7-11	Learners know about risks and dangers in the local community and environment and what they can do individually to reduce danger and stay safe
Ages 11-14	Learners understand the ideas of vulnerability and resilience and can apply them to specific potential hazards
Ages 14-18	Learners understand the interrelationships between disaster risk, hazard, vulnerability, resilience and societal capacity as manifest in the local and wider community
Generic outcome: *Learners know of local, regional, national and international disaster response infrastructures and mechanisms*	
Ages 4-7	Learners know what to do and who is responsible at home and in school should a hazard threaten
Ages 7-11	Learners know about risk reduction procedures that the community has ready should there be an impending hazard
Ages 11-14	Learners know what disaster risk reduction mechanisms are in place locally, regionally and nationally, what steps will be taken should disaster threaten, and what their personal role is in the event of such an occurrence
Ages 14-18	Learners understand how international disaster relief works and know of the organizations responsible for its operation (and of their presence locally, regionally and nationally)

Generic outcome: *Learners know of internationally agreed upon human and child rights and their implications for and applications in disaster scenarios*	
Ages 4-7	Learners understand the difference between needs and wants and can recognize concrete examples of both
Ages 7-11	Learners understand what a right is, know what rights they have as children, and can identify what basic rights are under threat in real or imagined disaster situations
Ages 11-14	Learners can distinguish different categories of child rights and can understand how each category can be important and useful but also potentially under threat in different hazard situations
Ages 14-18	Learners understand the content of the *Universal Declaration of Human Rights and the Convention on the Rights of the Child* and the implications and applications of the rights listed in local, national and global hazard and disaster situations
Generic outcome: *Learners have the ability to perceive relationally and identify interrelationships and interactions within ecosystems and between nature and human society, between eco-systemic well-being (or lack thereof) and community wellbeing and development (or lack thereof)*	
Ages 4-7	Learners acquire the ability to cooperate with others on tasks that cannot be completed without cooperation
Ages 7-11	Learners acquire the ability to apply the notions of interdependence and interrelationship to local ecosystems and their local community
Ages 11-14	Learners acquire the ability to identify interrelationships between nature and human communities
Ages 14-18	Learners acquire the ability to look at the world systemically and to interpret phenomena, developments, issues and trends as manifestations of a complex web of (often asymmetric) relationships

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The list of learning outcomes might provide a useful means for countries and other jurisdictions with DRR curriculum initiatives already in the works to identify both strengths and gaps in current provision through a matrix exercise. Setting the list against local context and local needs might also be a fruitful exercise as could following through on the student assessment implications of the learning outcomes set out. We still await, too, the development of a disability-specific listing of learning outcomes for disaster risk reduction education.

References

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