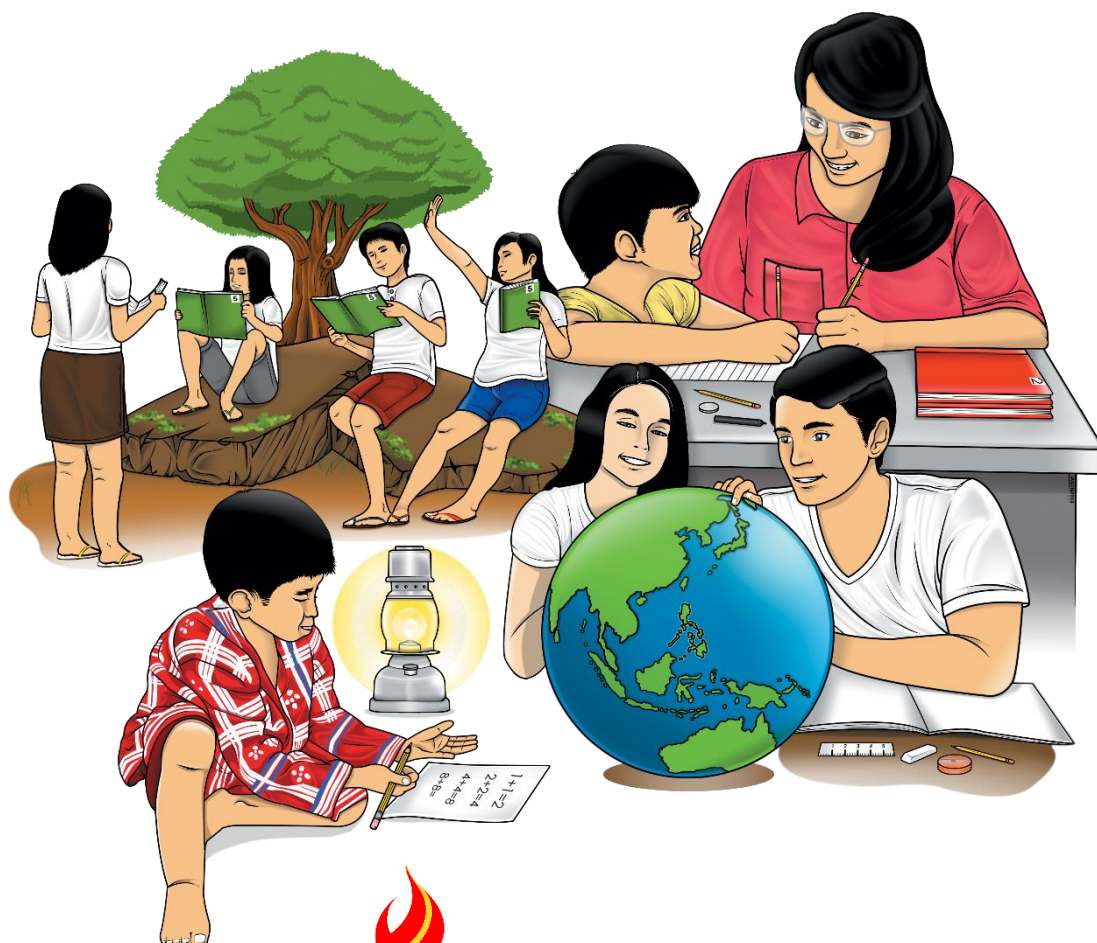


Disaster Readiness and Risk Reduction

Quarter 1 – Module 6: Vulnerability in Disaster



Disaster Readiness and Risk Reduction
Alternative Delivery Mode
Quarter 1 – Module 6: Vulnerability in Disaster
First Edition, 2021

Republic Act 8293, section 176 states that: No copyright shall subsist in any work of the Government of the Philippines. However, prior approval of the government agency or office wherein the work is created shall be necessary for exploitation of such work for profit. Such agency or office may, among other things, impose as a condition the payment of royalties.

Borrowed materials (i.e., songs, stories, poems, pictures, photos, brand names, trademarks, etc.) included in this module are owned by their respective copyright holders. Every effort has been exerted to locate and seek permission to use these materials from their respective copyright owners. The publisher and authors do not represent nor claim ownership over them.

Published by the Department of Education
Secretary: Leonor Magtolis Briones
Undersecretary: Diosdado M. San Antonio

Development Team of the Module

Writer: Melencia Rosario D. Coronel; Ruby C. Bautista

Editors: Andrea D. Senadoza; Anne Marielle R. Del Mundo; Vanessa R. Ambas

Reviewers: Dolorosa S. De Castro; Cristeta M. Arcos; Richard Brian L. Tutor
Dhonabel A. Catelo; Gerry S. Romero; Yumi Angela S. Valderama

Illustrator: Leumel M. Cadapan; Ronan DC Vergara

Layout Artist: Leumel M. Cadapan; Maria Elinor F. Hemedes; Ren Mac Mac G. Motas

Management Team:

Francis Cesar B. Bringas
Job S. Zape Jr.
Ramonito Elumbaring
Reicon C. Condes
Elaine T. Balaogan
Fe M. Ong-ongowan
Susan DL Oribiana
Jaypee E. Lopo
Dolorosa S. De Castro
Cristeta M. Arcos

Printed in the Philippines by _____

Department of Education – Region IV-A CALABARZON

Office Address: Gate 2, Karangalan Village 1900, Cainta, Rizal

Telefax: 02-8682-5773/8684-4914/8647-7487

E-mail Address: region4a@deped.gov.ph/ ict.calabarzon@deped.gov.ph

Disaster Readiness and Risk Reduction

Quarter 1 – Module 6: Vulnerability in Disaster

Introductory Message

This Self-Learning Module (SLM) is prepared so that you, our dear learners, can continue your studies and learn while at home. Activities, questions, directions, exercises, and discussions are carefully stated for you to understand each lesson.

Each SLM is composed of different parts. Each part shall guide you step-by-step as you discover and understand the lesson prepared for you.

Pre-tests are provided to measure your prior knowledge on lessons in each SLM. This will tell you if you need to proceed on completing this module or if you need to ask your facilitator or your teacher's assistance for better understanding of the lesson. At the end of each module, you need to answer the post-test to self-check your learning. Answer keys are provided for each activity and test. We trust that you will be honest in using these.

In addition to the material in the main text, Notes to the Teacher are also provided to our facilitators and parents for strategies and reminders on how they can best help you on your home-based learning.

Please use this module with care. Do not put unnecessary marks on any part of this SLM. Use a separate sheet of paper in answering the exercises and tests. And read the instructions carefully before performing each task.

If you have any questions in using this SLM or any difficulty in answering the tasks in this module, do not hesitate to consult your teacher or facilitator.

Thank you.



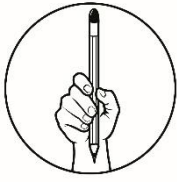
What I Need to Know

In this module, the learner will be able to determine why there are sectors of the society that are more vulnerable and be able to explain the factors that made these sectors susceptible to risk and hazards. This will further teach the learner how to turn a very vulnerable sector to a less vulnerable one by managing or reducing exposure to hazard and risk. Aside from reducing exposure to hazard and risk, in this module the learner will be able to understand that adaptability to the disaster is also a major factor in lessening the vulnerability of the sector since disaster is hardly prevented

The Module is intended to equip you with knowledge in certain sectors of society that are more vulnerable to disasters.

After going through this module, you are expected to:

1. explain why some sectors are more vulnerable to disaster than others;
2. describe how different sectors find ways on how to lessen vulnerability of the community;
3. discuss how population density and capacity to mitigate and rehabilitate could affect the level of vulnerability of the different sectors;
4. deliver possible solutions in making the different sectors of the community to become less vulnerable;
5. recognize the importance of knowing one's capacity and population density in community mitigation and rehabilitation.



What I Know

Choose the letter of the best answer. Write the chosen letter on a separate sheet of paper.

1. It refers to a serious disruption of the functioning community and losses in human life, material, economic and environmental.
 - a. disaster
 - b. disaster risk
 - c. hazard
 - d. vulnerability
2. What situation has the CAPACITY to bring damages to lives, properties and the environment?
 - a. element risk
 - b. hazard
 - c. risk
 - d. vulnerability
3. You currently live in a condominium. There is a super typhoon and the power went off due to damaged electric posts, but they have a generator, so the power supply is immediately restored. All of the following are the reasons why you are less vulnerable than other people living in city EXCEPT_____.
 - a. human activities affect the intensity of the typhoon
 - b. availability of services during times of natural disaster
 - c. ability to anticipate, respond, and adapt to current situation
 - d. presence of facilities that can be used to respond immediately when needed
4. Factors affecting vulnerability are the following EXCEPT _____.
 - a. building codes and policies
 - b. population density
 - c. occurrence of natural hazards
 - d. location of the community
5. On what situation will you consider a major earthquake as a non-disastrous one?
 - a. when it happens in a faraway country
 - b. when it happens to less than 1000 people
 - c. when it happens to less than 10,000 people
 - d. when it happens in an area without any people

6. Which of the following concepts DOES NOT fall under vulnerability?
 - a. exposure
 - b. susceptibility
 - c. lack of coping capacities
 - d. absence of adaptive capacities

7. All the following can increase the level of vulnerability EXCEPT _____.
 - a. very populated areas/community
 - b. insufficient fund for relief operations
 - c. inadequate facilities for immediate disaster response
 - d. community provides accessible services and facilities for response

8. Philippines is now less vulnerable to typhoon because _____.
 - a. our country is not heavily populated
 - b. local Government Units cannot provide adequate evacuation centers
 - c. our country has sufficient budget to augment the loses in livelihood
 - d. our government already acquired technology that can predict super typhoon

9. Increased human population can sometimes result to _____.
 - a. lowered risk
 - b. less exposure
 - c. decreased hazard
 - d. increased vulnerability

10. During the initial stage of a typhoon that causes disaster, almost all surface means of transportation within the community are disrupted by broken bridges, roads, and streets that are rendered impassable by landslides or floods. The restricted mobility of vehicles makes rescue and other emergency operations doubly difficult. What is this impact/ effect of disaster?
 - a. economic impact
 - b. social and political impact
 - c. damage to critical facilities
 - d. disruption of transportation

11. What could be the possible reason why urban region is more vulnerable to COVID-19 than the rural region?
 - a. Urban region has more population than rural region.
 - b. Rural region has more population than urban region.
 - c. Rural region has higher population density than urban region.
 - d. Urban region has higher population density than rural region.

12. Why is it that Japan is less vulnerable to COVID-19 pandemic than other Asian countries?
- They have more population.
 - They have less population density.
 - They have the capacity to do mass testing.
 - They can provide sufficient numbers of PPE.
13. NCR has very high population density making it more vulnerable to any hazard like what happened during the lockdown where all members of the family have no choice but to stay in a very small living space. To lessen the population density of NCR, the government proposed the _____.
- Libreng Hatid Probinsya
 - Gulayan sa Bakuran Program
 - Balik Probinsya, Bagong Pag-asa Program
 - Responsible Parenthood and Reproductive Health Act
14. Population density means_____.
- number of households in an area in relation to the size of an area
 - number of individuals living in an area in relation to the size of an area
 - number of individuals inhabiting in a particular space at the same time
 - number of households inhabiting in a particular space at the same time
15. The following factors can affect the level of vulnerability EXCEPT ____.
- capabilities of the authorities
 - human population
 - human population density
 - level of awareness of the community

Lesson 1

Sectors of Society's Vulnerability to Disaster

This lesson explains why some sectors are more vulnerable to exposure to hazard and most likely to suffer greater disaster impact than others. It will also be discussed how different sectors find ways on how to lessen vulnerability of the community and how it adapts after the disaster.



What's In

Direction: Compare and Contrast the images below and answer the questions that follow.

Part I.



Image 1



Image 2

1. List down 3 differences between the 2 images presented.

2. Which image shows higher vulnerability of transmissible infectious diseases?

3. Give explanation why the identified differences makes it vulnerable and not vulnerable to infectious diseases.

Part II.



Image 1



Image 2

1. Which image shows higher level of vulnerability during typhoon?

2. List 3 possible reasons why the chosen image in item 1 question has a higher level of vulnerability on the given scenario.

3. Which image portrays better capabilities to response during times of disaster? Explain why.



Notes to the Teacher

There are several possible answers. Consider answers that are relevant to the questions and could have been a possible answer but not included in the answer key.



What's New

Direction: Recall the exits and entrances of your previous school. Answer the following questions based on your observation.

1. Are there exits allotted for emergency escape plan? How many?

2. Are those exits passable and void of blocking hazards?

3. Are the gates working and can be easily opened in case of emergency?

4. Are these exits known to the students?

5. Are the number of exits sufficient so that all the students can get out in time during emergency?

6. Do you practice emergency escape thru drills? Are there designated areas for the students to go to so that the teachers will be able to check if there are missing students?

7. Do you think your school is highly capable of making sure of the safety of their learners? Explain why.

8. What do you think are the possible factors considered by the DRRM coordinator of your school in preparing your school in times of emergency?



What is It

Level of vulnerability of an area or community can be assessed base on different factors. These factors can affect one another or can lead to other factors.

Factors affecting vulnerability of one's community:

1. Population density near a hazard event.

- Population differs from population density.
- Population refers to the number of individuals inhabiting in a particular space at the same time. If people are well distributed, there is lesser effect of disaster.
- Population density refers to the number of individuals living in an area in relation to the size of an area. If population density is high, it means that the number of individuals is high but the space is very small. In that case, if fire broke in that area, there is little space for the population to escape quickly and easily. So, crowded communities have higher vulnerability to hazards.
- The primary consideration is not the population size but the population density.

2. Capacity and efficiency to reduce Disaster Risk.

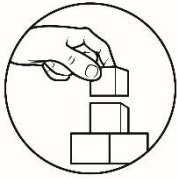
- Community that is less vulnerable has the capacity to reduce disaster risk because;
 1. It can provide accessibility and availability of services and facilities during and after disaster.
 2. It has the ability to anticipate, adapt, and respond to possible disaster.
- Is it appropriate to say that The Philippines is less vulnerable to typhoon? Nowadays, our country has advanced technology to predict super typhoon and several municipalities already provided evacuation centers to provide temporary housing for victims when disaster occur.

LETS THINK!

Give your thoughts about the recent chaos happened last August 5, 2021 in Las Pinas City where 10,000 estimated unvaccinated people flocked to avail the COVID-19 vaccines.



<https://www.rappler.com/nation/chaos-covid-19-vaccination-sites-august-5-2021>



What's More

Direction: Identify what factor affects the vulnerability to disaster with the following situations given. Write **P** if it is due to population density and write **C** if it is due to sector's capacity and efficiency to reduce disaster risk. Write your answer on a separate sheet of paper.

1. Tondo community during the total lockdown due to COVID-19 pandemic wherein the families are forced to stay inside their houses that are too small for the number of family members.
2. Use of drones to disinfect the community in Pasig City to prevent the spread of the COVID-19 virus.
3. Insufficient number of rubber boats during super typhoon Yolanda in Malabon City wherein large number of residents were stranded on the top of their roof.
4. Too many casualties during super typhoon Milenyo in Los Baños due to excessive kaingin practices and illegal settlers in Mt. Makiling.
5. The Philippines and Japan are both prone to earthquakes but the latter one is less vulnerable.



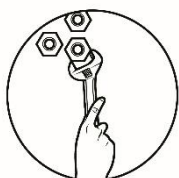
What I Have Learned

Direction: Read the questions below and answer carefully.

1. After answering the questions in "What's new", what are the possible problems that you were able to identify?

2. If you will be assigned as a Student DRRM coordinator, what possible solutions to the problem can you suggest?

3. What possible activities can you suggest to increase the awareness of the learners on how to lessen the vulnerability of your previous school?



What I Can Do

Direction: Read the given situation then answer the questions that follow. Write your answer on a separate sheet of paper.

You are the barangay captain of Brgy. Canlubang. Your response team is deployed, and you have your radio with you. Reports are streaming-in for assistance and relief goods. Mobile patrols are having a difficult time going around due to lack of accessible barangay roads. At the same time, the barangay is heavily populated so there was a shortage of response vehicles to assist the victims and deliver relief goods to the evacuation area.



1. What do you think are the possible problems being faced by Barangay Canlubang? Give three (3) possible problems.

2. In this kind of situation, what do you think is the liability of the local officials? National government?

3. Suggest three (3) possible solutions based on your identified possible problems.



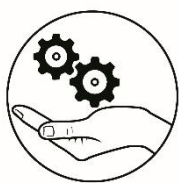
Assessment

Choose the letter of the best answer. Write your answer on a separate sheet of paper.

1. Increased human population can sometimes result to ____.
 - a. lowered Risk
 - b. less exposure
 - c. decreased hazard
 - d. increased vulnerability
2. During the initial stage of a typhoon that causes a disaster, almost all surface means of transportation within the community are disrupted by broken bridges, roads, and streets that are rendered impassable by landslides or floods. The restricted mobility of vehicles makes rescue and other emergency operations doubly difficult. What is this impact/ effect of disaster?
 - a. economic impact
 - b. social and political impact
 - c. damage to critical facilities
 - d. disruption of transportation
3. What could be the possible reason why urban region is more vulnerable to Covid-19 than the rural region?
 - a. Urban region has more population than rural region.
 - b. Rural region has more population than urban region.
 - c. Urban region has higher population density than rural region.
 - d. Rural region has higher population density than urban region.

4. Why is it that Japan is less vulnerable to COVID-19 pandemic than other Asian countries?
 - a. they have more population
 - b. they have less population density
 - c. they have the capacity to do mass testing
 - d. they can provide sufficient numbers of PPE
5. NCR has very high population density making it more vulnerable to any hazard like what happened during the lockdown where all members of the family have no choice but to stay in a very small living space. To lessen the population density of NCR, the government proposed the _____.
 - a. Libreng Hatid Probinsya
 - b. Gulayan sa Bakuran Program
 - c. Balik Probinsya, Bagong Pag-asa Program
 - d. Responsible Parenthood and Reproductive Health Act
6. Which of the following concepts DOES NOT fall under vulnerability?
 - a. absence of adaptive capacities
 - b. exposure
 - c. lack of coping capacities s
 - d. susceptibility
7. All of the following can increase the level of vulnerability EXCEPT____.
 - a. very populated areas/community
 - b. insufficient fund for relief operations
 - c. inadequate facilities for immediate disaster response
 - d. community provides accessible services and facilities for response
8. Philippines is now less vulnerable to typhoon because _____.
 - a. our country is not heavily populated.
 - b. local government units cannot provide adequate evacuation centers.
 - c. our country has sufficient budget to augment the loses in livelihood.
 - d. our government already acquired technology that can predict super typhoon.
9. Population density means_____.
 - a. number of households in an area in relation to the size of an area
 - b. number of individuals living in an area in relation to the size of an area
 - c. number of individuals inhabiting in a particular space at the same time
 - d. number of households inhabiting in a particular space at the same time
10. The following factors can affect the level of vulnerability EXCEPT____.
 - a. human population
 - b. human population density
 - c. level of awareness of the community
 - d. capability and efficiency of the authorities
11. It refers to a serious disruption of the functioning community and losses in human life, material, economic and environmental.
 - a. disaster
 - b. disaster risk
 - c. hazard
 - d. vulnerability

12. What situation has the CAPACITY to bring damages to lives, properties, and the environment?
- element at risk
 - hazard
 - risk
 - vulnerability
13. You currently live in a condominium. There is a super typhoon and the power went off due to damaged electric posts, but they have a generator so the power supply is immediately restored. All of the following are the reasons why you are less vulnerable than other people living in city EXCEPT_____.
- human activities affect the intensity of the typhoon
 - availability of services during times of natural disaster
 - ability to anticipate, respond, and adapt to current situation
 - presence of facilities that can be used to respond immediately when needed
14. Factors affecting vulnerability are the following EXCEPT _____.
- population density
 - location of the community
 - building codes and policies
 - occurrence of natural hazards
15. On what situation will you consider a major earthquake as a non-disastrous one?
- when it happens in a far away country
 - when it happens to less than 1,000 people
 - when it happens to less than 10,000 people
 - when it happens in an area without any people

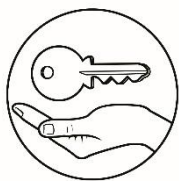


Additional Activities

Draw the floor plan of your house and make an emergency escape plan. How will you plan for the escape of all your family members with limited exit points? Make sure that your escape plan is feasible and will prevent stampede.

The rubrics below will be the basis of your score.

CATEGORY	5	3	2	1	SCORE
RELEVANCE	All graphics are related to the topic and make it easier to understand	All graphics are related to the topic and most make it easier to understand	All graphics relate to the topic	Graphics do not relate to the topic	
ORIGINALITY	With exceptional degree of student creativity in their work.	One or two of the graphics reflects creativity of the students	Graphics made based on the designs of others	No graphics made by the student are included	
REQUIRED ELEMENTS	Includes required elements as well as additional information	All required elements are included	All but 1 are included	Several required elements are missing	
ATTRACTIVENESS	The escape plan is exceptionally attractive in terms of design, layout and neatness	The escape plan is attractive in terms of design, layout and neatness	The escape plan is acceptably attractive though it may be a bit messy	The escape plan is distractingly messy or very poorly designed	



Answer Key

What I Know	What's More	Assessment
1. A	1. P	1. D
2. B	2. C	2. D
3. A	3. C	3. C
4. C	4. P	4. C
5. D	5. C	5. A
6. A		6. B
7. D		7. D
8. D		8. D
9. D		9. B
10. B		10. A
11. D		11. A
12. C		12. B
13. C		13. A
14. B		14. C
15. B		15. D

References

- Bueza, Michael. "The Role of LGUs, Local Councils during Disasters." Rappler, December 6, 2014. Accessed May 20, 2020. <https://www.rappler.com/newsbreak/44026-role-lgu-local-councils-disaster>.
- Campanero, Nida S., and Egargo, Veronica N. "Correlates of Vulnerability: A Quantified Study of People's Vulnerability on the Impact of Super Typhoon Yolanda in Guiuan, Eastern Samar, Philippines." *Imperial Journal of Interdisciplinary Research* 3, no. 9 (2017): 416–32. Accessed May 20, 2020.
- Commission on Audit (COA), nd. Disaster Management practices in the Philippines: An assessment. Philippines: Commission on Audit. Accessed May 20, 2020.
- "Executive Order No. 335, s. 1941: GOVPH." Official Gazette of the Republic of the Philippines, April 1, 1941. Accessed May 20, 2020. <http://www.officialgazette.gov.ph/1941/04/01/executive-order-no-335-s-1941/>.
- National Disaster Risk Reduction and Management (NDRRM). 2011. The National Disaster Risk Reduction and Management Plan (NDRRMP). Philippines: NDRRMP, Department of Interior and Local Government (DILG). Accessed May 20, 2020.
- Republic Act No. 10121. Philippine Disaster Risk Reduction and Management Act of 2010. Manila, Philippines: Congress of the Philippines. Accessed May 20, 2020. http://www.mdrmc.gov.ph/attachments/article/45/Republic_Act_10121.pdf
- De Leon, Dwight. (August 5, 2021). Chaos Erupts at Covid 19 Vaccination Sites A Day Before Metro Manila ECQ. Rappler Philippines.. <https://www.rappler.com/nation/chaos-covid-19-vaccination-sites-august-5-2021>

For inquiries or feedback, please write or call:

Department of Education - Bureau of Learning Resources (DepEd-BLR)

Ground Floor, Bonifacio Bldg., DepEd Complex
Meralco Avenue, Pasig City, Philippines 1600

Telefax: (632) 8634-1072; 8634-1054; 8631-4985

Email Address: blr.lrqad@deped.gov.ph * blr.lrpd@deped.gov.ph