STEP 1 Pre-learning Teaching Plan (45 min)

■Basic Data

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| Title | Learning the right way to respond to an Earthquake Early Warning |
| Goal | 1.Understand the basic concepts of Earthquake Early Warning (EEW).  2.Learn how objects move during an earthquake and consider how to respond when hearing an EEW.  3.Learn the rules for moving to a safe location (evacuation). |
| Grade | Grade 1 - 6 |
| Subject | Integrated class / Extra-curricular Activity |
| Style | Whole Class / Individual: 45-minute |
| Material | Worksheet(Step 1\_Pre-Drill\_Type A), Leaflet for EEW, Device for receiving the warning, Sound Source for EEW drill, Questionnaire, Illustration for evacuation, whiteboards, pens  ※Downloadable in Utsunomiya Local Meteorological Office |

■Procedure

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| Timeline | Content | Note |
| 1. Introduction  (8 min) | 1. To learn the basics on EEW  1-1. Fear of earthquake (2 min)  Point 1: To know damages of earthquakes  1-2. EEW mechanism (6 min)  Point 2: To assure the importance of the fast response within the reach of the strong tremor in a very short span  Point 3: To know the technical limit of EEW: no EEW issuance in case of a weak tremor  Point 1: To know the sound difference of EEW by midea such as TV or radios and smartphones | “We have many disasters in Japan. Tell me kinds of disasters.”  ※To have students pick up natural and man-made disasters such as earthquake, tsunami, lightning, thundestorm, tornado, eruption, mudslide, avalanche, conflagration, explosion, etc  “We have many earthquakes in Japan. You have experienced ones, haven’t we? What damage will occur after big earthquakes?”  ※To help students to image what damage would occur with the pictures of the past disasters such as the Great East Japan Earthquake and the Great Hanshin-Awaji Earthquake  “There is no knowing when and where earthquakes happen. We might have a big quake now. Then, we have the great system, which warns us of sudden great quakes. Today we will learn how to protect ourselves.”  “Listen to this sound.”  ※Play Sound Source of EEW on the radio.  ※Pick out some students to guess the sound.  　 “This is the chime of EEW. After this sound, you will hear the announcement, which tells you to be warned of big tremors. Similar chime will go off in smartphones, too.  ※Better to use smartphones, too  “Can you guess how long you have time between the tremor and the chime?”  ※Pick out some students or let all the students choose from options  “EEW detects P Wave, the primary weak tremor, by a seismometer, and issues the chime before S Wave, the strong tremor, reaches. The span between P Wave and S Wave is only a couple or dozens of seconds. If you are close to the focus of the earthquake, you will hear the chime as the same time you feel a strong tremor. In case of a weak tremor under the standard of issuance, the chime does not go off.  ※Explanation can be carried with the leaflet.  ※Senior graders should be familiar with the technical limit of the system.  　 Now you know when you hear the chime of EEW from TV or radios and smartphones, and how quickly a strong tremor arrives after the chime. |
| 2. Activity 1  (35 min) | 1. To learn how objects move and we should respond in case of EEW   2-1. Motion of objects (5 min)  ・Worksheet Type A\_1 (3 min)  ・Individual presentation (1 min)  ・Consolidation (1 min )  Point 1: To know things drop, fall and trip in earthquakes  2-2. Response in EEW issuance (25 min）  ・Worksheet Type A\_2 (10 min)  Point 1:To think of how to protect themselves  ・Group work (7 min)  Point 2: To learn others’ ideas by group work  ・Class sharing (12 min)  2-3.“ShakeOut”, DANGOMUSHI in Japanese (3 min)  Point 1: To know different responses on different situations and assure how to protect themselves.  Point 2: To know the importance of “Shake Out” action in a second.  2-3. Worksheet Type A\_3 (5 min)  Point 1: To review the first point; Go to a place where nothing drops, falls, or trips  Point 2: To review how to respond in caseof EEW.  Point 3: To review the importance of own initiatives to think and respond by themselves. | Next, it is important to know the risks in earthquakes to protect yourself when you hear EEW chime, or a sudden tremor occurs. Please look at No. 1 on Worksheet and write down your idea of three possible risks in earthquakes.  ※Hand out Worksheet Step 1\_Pre-Drill\_Type A  Let’s share your ideas.  ※Write down some ideas on the blackboard.  Let’s check the answers: The risks are, 1) Things drop from above you, 2)Things fall beside you, 3) Things trip around you. Wherever you are, it is important to protect yourself from these things.  ※To help pupils understand by demonstrating each risky material.  Next, let’s think of how to protect yourselves in case of EEW or a strong tremor. Look at No.2 on Worksheet. Imagine how you should respond in each situation and write down your idea.  ※Give an additional explanation of how EEW chime will be issued, especially in a school without EEW receiver.  I will group you by place, so share your ideas. Then, group leader will sum up the ideas on the whiteboard and present it in class. So let’s start.  ※Give a whiteboard and pen to each group.  ※Encourage pupils to speak up their own word, not copy other　members’ idea.  ※Individual work is an opiton: write down each pupils’ idea on the blackboard and share and sum it up.  Let’s share group ideas.  ※Sum up group ideas.  ※Let pupils use colored-pencil for different ideas from them.  ※Deepen their understandings for occasions outside of their classroom.  We have different ideas on different situations. Did you find something different from yours? We have something in common under any situation. What is it?  ※You can pick out some pupils.  It is important to protect your head in earthquakes.When you are in class, you can protect it with a desk in case of EEW or a strong tremor. This is “Shake Out” action. Like this illustration, you should follow three steps: drop, cover and hold on.  ※“Shake Out” Put the illustration on the blackboard.  Crouch low  Protect head  Hold on!  Under a situation like no place or nothing around you for the protection, crouch low, protect your head and hold on at the spot. This is the same with “Shake Out” action.  ※Better to practice “Shake Out” action on the spot.  We have learned how to respond in EEW or a strong tremor at school. Imagine how to act quickly when you are outside of school.  ※Let pupils imagine at home, a convenience store, a theater, and etc.  Let’s wrap up today’s lesson. To protect yourself in earthquakes, avoid risks triggered in it. Now you know the system of EEW, and how to respond after the chime. You are alone then, what should you do? Write down three important points in No.3 on Worksheet.  Let’s share your answers.  ※Pick out some pupils.  These are the answers: 1) Go to a place where nothing drops, falls, or trips and protect yourself, 2) Secure yourself in a couple or dozens of seconds in case of EEW, 3) Last, but not least, stay calm, and think, judge and respond by yourself.  ※Show risky things.  There is no telling when an earthquake happens.Adults suchas teachers or family members are not always with you.When you hear the chime of EEW or a strong tremor happens, stay away from a risky place, stay clam, and take initiative to protect yourself. |
| 3. Activity 2  (1 min) | 1. To learn the rule of how to go to a safer place   Point 1 To review the rule in evacuation | After the tremor ends, go to a safer place. Do you rememer the slogan?  It’s “Don’t push, run, talk, return nor approach, “OKASHIMOSHI” in Japanese initials. If you talk to each other, you will miss the important announcement of where to evacuate or whether fire breaks out. Keep this in mind.  ※Check the slogan of 5 don’s: Don’t push, run, talk, return nor approach. |
| 4. Consolidation  (1 min) | 1. To inform the next lesson about drill with EEW | Today, we have learned how we should respond in  case of EEW or a strong tremor. For the next lesson, we will have a drill with EEW chime. When you hear it, remember what you learn today, and take an initiative. |

■Evaluation

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| 1. Know the basics of Earthquake Early Warning |
| 1. Know how to respond in case of EEW or a strong tremor |
| 1. Know how to avoid risks in earthquakes and take an initiative for the next action |

■Remarks

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| ・K6 tend to self-evaluate, “I was not able to listen quietly.” → Remind the meaning of the drill and tell not to make fun or be embarrased. |
| ・K1-2 tend to self-evaluate, “I was not able to think of what to do initially.” → Give a chance to think a practical action or teach more practically. |
| ・This program focus more on the learning of the basics of EEW and of how to respond in case of EEW, rather than following the national curriculum guideline. |
| ・K7-9 can connect EEW mechanism to science learning. |
| ・To measure the effect of the program, use pre- and post- questionnaire about “Earthquakes.” |

Utsunomiya Local Meteorological Office