

Disaster prevention education on estimation of earthquake damage on the campus

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In the Kanto region, active faults that generate M7 class earthquakes are now in active period. In particular, in each city in the metropolitan area, the probability that an earthquake with a seismic intensity 6 lower is generated within 30 years has increased to 48-85% (Headquarters for Earthquake Research Promotion, 2018). The Central Disaster Management Council (2013) sets the damage estimate to be about 23,000 deaths and about 95 trillion yen in economic damage when the M7 class earthquake occurs directly under the capital city. The Komazawa Campus, Komazawa University (Setagaya-Ku) may be hit by a major earthquake disaster.

The most recent huge earthquake at Komazawa campus is the Great Kanto Earthquake of 1923, and the seismic intensity by the earthquake is estimated to be 6 upper. However, the trace of the present earthquake disaster is only the earthquake-resistant building constructed as a reconstruction project remains. Under such circumstances, the memory of the earthquake disappears. The sweetness of the damage prediction against the disaster, and virtual sense of security can cause further expansion of damage at the occurrence of the earthquake (Ministry of Education, Culture, Sports, Science and Technology, 2007). The disaster prevention education should continuously cultivate "the ability to prepare necessary beforehand for disaster prevention with knowledge of disaster and disaster prevention science technology" and "the ability to defend against natural disasters and even to survive at the disaster," (Ministry of Education, Culture, Sports, Science and Technology, 2007). Particularly, it is important that we can ensure safety at my own discretion at the earthquake disaster (the survey report on correspondence of schools in East Japan great earthquake, Ministry of Education, Culture, Sports, Science and Technology, 2012). Furthermore, at university education, it is desirable to educate students to deepen their knowledge and understanding of disaster prevention and skills, so that they can contribute to local disaster prevention activities and projects. (Ministry of Education, Culture, Sports, Science and Technology, 2012).

Based on the contents that are necessary for disaster prevention education above, I taught using active learning on earthquake disasters for the next practice.

1. Mechanism of earthquake / seismic motion and understanding of earthquake disaster
2. Virtual experiences of earthquake motion with seismic intensity of 6-lower or greater
3. Image training to allow each person to detect danger at the earthquake

This education was tried in the 2018 freshmen's leave year program class (40 students of the Department of Geography, Komazawa University). The contents of the lesson are as follows. Also, in order to measure the educational effect, we conducted a questionnaire survey for students before the first lesson and after the last lesson.

Lesson 1 Explanation on mechanism of the earthquake, earthquake motions, and earthquake disasters

Lesson 2-3 Virtual experiences of earthquakes by earthquake motion simulators (Life Safety Learning Center, the Tokyo Fire Department) and other educational materials

Lesson4-7 Estimation of the damage situation of the classrooms and the evacuation route to the temporary meeting places on the campus from the classroom.

- 1) Location survey to estimate of the damage in the classroom and the evacuation route in the case of the seismic intensity 6-lower, by each group of 3 to 4 students
- 2) Estimation of the damage situation by location survey data and grasp of hazards of each classroom and the evacuation route at the occurrence of the earthquake.
- 3) Presentation on survey data and damage estimation by each group

On the base of the questionnaire survey data, it is supposed that the students have grasped earthquake disasters as their own problems.

Keywords: practical lesson, earthquake, active learning, cultural education, university