

Pengaruh *Tabletop Disaster Exercise* Terhadap Pengetahuan Kesiapsiagaan Bencana Erupsi Gunung Api Pada Siswa Sekolah Menengah Atas

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INTISARI

Latar Belakang: Indonesia merupakan negara rawan bencana, salah satunya erupsi Gunung Merapi yang berdampak besar bagi masyarakat sekitar. Siswa Sekolah Menengah Atas (SMA) di kawasan rawan bencana memiliki kerentanan tinggi akibat keterbatasan pengetahuan dan pengalaman, namun juga berpotensi menjadi agen perubahan dalam mitigasi bencana. Pembelajaran kebencanaan di sekolah masih bersifat teoritis sehingga diperlukan metode interaktif seperti *Tabletop Disaster Exercise* (TDE) untuk meningkatkan pengetahuan kesiapsiagaan.

Metode: Penelitian ini merupakan penelitian kuantitatif dengan desain quasi-eksperimen menggunakan *pre-test post-test control group design*. Penelitian dilaksanakan pada Juni–Juli 2025 di dua sekolah yang berada di Kawasan Rawan Bencana (KRB), melibatkan 61 siswa berusia 15–18 tahun yang dipilih menggunakan teknik *convenience sampling*. Kemudian dibagi menjadi kelompok intervensi (n=31) dan kontrol (n=30). Kelompok intervensi mengikuti TDE berupa diskusi, bermain peran, dan simulasi berbasis skenario selama ± 60 menit. pengetahuan kesiapsiagaan diukur menggunakan kuesioner tervalidasi yang dimodifikasi dari instrumen kesiapsiagaan bencana LIPI–UNESCO/ISDR (2006) yang telah diuji validitas dan reliabilitasnya. Analisis data dilakukan menggunakan uji *independent t-test* dan regresi linear multivariat.

Hasil: Terdapat peningkatan pengetahuan kesiapsiagaan yang signifikan pada kelompok intervensi dibandingkan kelompok kontrol, nilai rerata *pre-test* dan standar deviasi pada kelompok intervensi $4,96 \pm 1,703$, sedangkan pada kelompok kontrol $-0,33 \pm 1,583$. Nilai selisih skor pengetahuan kesiapsiagaan menunjukkan peningkatan sebesar 5,301 lebih tinggi dibandingkan kelompok kontrol ($p < 0,001$) dengan *effect size* sebesar 1,645 yang memiliki *effect* sangat tinggi. Hasil multivariat menunjukkan bahwa variabel usia, sumber informasi, dan pengalaman bencana tidak berpengaruh terhadap perubahan skor pengetahuan, tetapi variabel intervensi *tabletop disaster exercise* berpengaruh signifikan ($p < 0,001$)

Kesimpulan: TDE terbukti efektif, murah, dan praktis dalam meningkatkan pengetahuan kesiapsiagaan siswa SMA di kawasan rawan erupsi. TDE diintegrasikan ke dalam program pendidikan kebencanaan sekolah untuk memperkuat ketangguhan siswa dan masyarakat.

Kata Kunci: kesiapsiagaan bencana; *Tabletop Exercise*; siswa; gunung api

The Effect of Tabletop Disaster Exercise on Volcanic Eruption Preparedness Knowledge among Senior High School Students

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ABSTRACT

Background:Indonesia is a disaster-prone country, with the eruption of Mount Merapi having a significant impact on surrounding communities. High school students in disaster-prone areas are highly vulnerable due to limited knowledge and experience, but they also have the potential to become agents of change in disaster mitigation. Disaster education in schools remains theoretical, necessitating interactive methods such as Tabletop Disaster Exercises (TDE) to enhance preparedness.

Method:This research is a quantitative study with a quasi-experimental design using a pre-test post-test control group design. The study was conducted in June–July 2025 in two schools located in the Disaster Prone Area (DPA), involving 61 students aged 15–18 years who were selected using convenience sampling techniques. Then divided into intervention groups (n=31) and control groups (n=30). The intervention group participated in TDE in the form of discussions, role-playing, and scenario-based simulations for ± 60 minutes. Preparedness knowledge was measured using a validated questionnaire modified from the LIPI–UNESCO/ISDR disaster preparedness instrument (2006) which has been tested for validity and reliability. Data analysis was carried out using independent t-tests and multivariate linear regression.

Results:There was a significant increase in preparedness knowledge in the intervention group compared to the control group, the mean pre-test score and standard deviation in the intervention group were $4.96 + 1.703$, while in the control group $-0.33 + 1.583$. The difference in preparedness knowledge scores showed an increase of 5.301 higher than the control group ($p < 0.001$) with an effect size of 1.645 which has a very high effect. Multivariate results showed that the variables of age, information sources, and disaster experience did not affect changes in knowledge scores, but the tabletop disaster exercise intervention variable had a significant effect ($p < 0.001$).

Conclusion:TDE has proven effective, affordable, and practical in improving high school students' preparedness knowledge in eruption-prone areas. TDE is integrated into school disaster education programs to strengthen student and community resilience.

Keywords:Disaster preparedness; Tabletop Exercise; Students; Volcano