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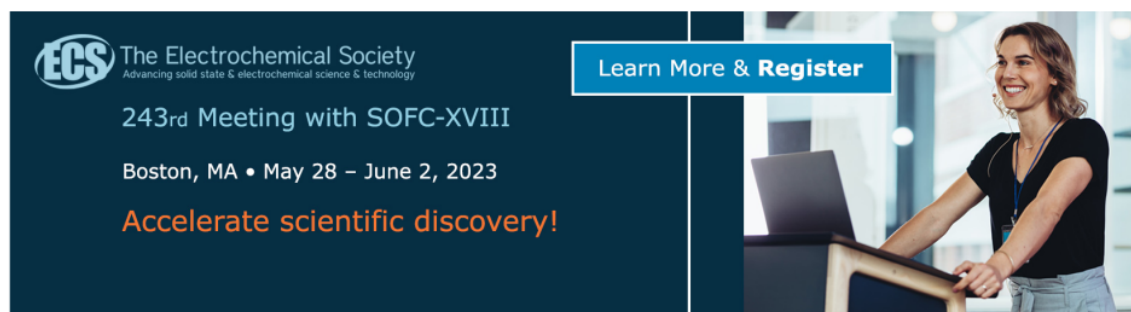
## Identification of Knowledge Mitigation of Forest and Land Fire Disasters; A Preliminary Study for Management of Disaster Learning in Elementary School

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## Identification of Knowledge Mitigation of Forest and Land Fire Disasters; A Preliminary Study for Management of Disaster Learning in Elementary School

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**Abstract.** This study aims to identify knowledge of forest and land fire disaster mitigation. Knowledge of disaster mitigation in question is factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge. The research method uses descriptive quantitative. Research respondents were 99 elementary school students. The results of research on forest and land fire disaster mitigation knowledge on (1) factual knowledge aspects obtained an average score of 57.41 with a sufficient category; (2) aspects of conceptual knowledge gained an average score of 53.54 in the sufficient category; (3) aspects of procedural knowledge gained fewer categories with an average score of 42.09; (4) aspects of metacognitive knowledge fewer categories with an average score of 38.73. The conclusion of the research is the knowledge of forest fire, and land fire disaster mitigation students in elementary schools was identified in the fewer category with an average score of 49.19.

Keywords: disaster mitigation, disaster mitigation knowledge, forest and land fire disasters

### 1. Introduction

Geographical differences in each region in Indonesia cause different landscapes; these differences lead to differences in the potential for natural disasters that will occur [1][2]. Areas in the highlands that are surrounded by hills and mountains are very potentially affected by landslides, while regions that have landscapes in the form of plains in the form of forests and land are very potentially affected by forest and land fires [2]. Forests and burning land cause smoke haze that will disrupt community activities in the form of economic activities, education, and can also interfere with public health, especially in respiratory and visual disturbances [3]. To overcome this there are several efforts to reduce the risk of disasters that are commonly called disaster mitigation efforts, and there are three efforts that can be done namely before, during and after a disaster [2].

Basic knowledge about disaster mitigation needs to be disseminated to the community, and most importantly, for students in elementary schools [4]. There is some basic knowledge that can be socialized to students in elementary schools [5][4] such as causes, anticipatory measures, and consequences resulting from forest and land fire disasters. The basic knowledge of disaster mitigation referred to in this research is factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge [6] about forest and land fire disasters. Therefore, this study aims to identify the knowledge of the forest and land fire disaster mitigation for students in elementary as a preliminary study in the management of disaster learning in elementary school.



## 2. Methodology

The study of identifying forest and land fire disaster mitigation knowledge using quantitative descriptive research methods. Respondents in this study were 99 elementary school students. The research instrument used was a test item designed into four aspects of knowledge; for more details, it can be seen in **Table 1** below.

**Table 1.** Knowledge Instruments for Forest and Land Fire Disaster Mitigation

Aspect	Description
Factual Knowledge	Facts, events and locations before, during and after a forest and land fire disaster.
Conceptual Knowledge	Characteristics, principles, generalizations before, during and after a forest and land fire disaster.
Procedural Knowledge	Steps when, before, after a forest and land fire disaster.
Metacognitive Knowledge	Problem-solving strategies before, during, after a forest and land fire disaster.

Source: [15, 16, 20]

Papers and pencil tests do data collection techniques. Data analysis techniques in this study used descriptive statistics with the following analysis steps:

### 2.1 Scoring

Knowledge score =  $\frac{\text{score obtained}}{\text{maximum score}} \times 100$  [22], knowledge scores that have been obtained by respondents are then grouped according to the categories in **Table 2** below:

**Table 2.** Knowledge Categories for Forest and Land Fire Disaster Mitigation

Score Range	Categories
85-100	Excellent
70-84	Good
50-69	Sufficient
<49	Fewer

Source: [6]

### 2.2 Classification of knowledge categories on forest and land fire disaster mitigation

After the respondent scores are grouped by category according to **Table 2**, then the percentage of each categories is calculated using the formula:

$$\text{Percentage of disaster mitigation knowledge} = \frac{\text{number of students in the categories}}{\text{total number of respondents}} \times 100\% \text{ [22].}$$

## 3. Results and Discussion

The results of processing and analysing data on forest and land fire disaster mitigation knowledge provided to respondents, obtained information, as shown in **Figure 1** below.

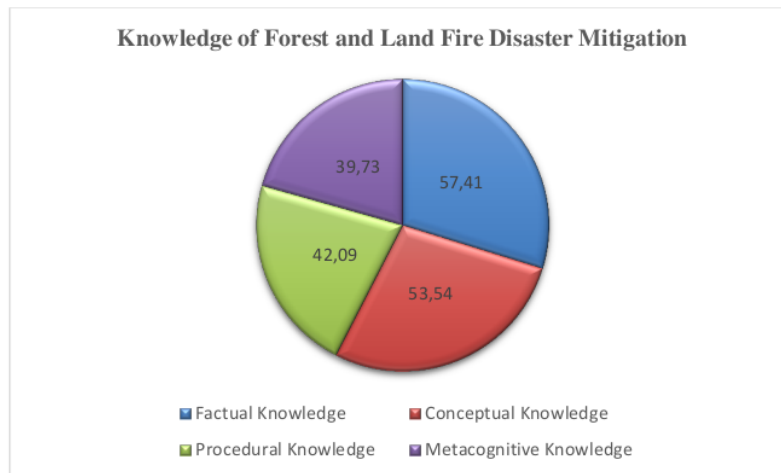


Figure 1. Disaster Mitigation Knowledge Data

Based on **Figure 1** above, forest and land fire disaster mitigation knowledge in question consists of four aspects of knowledge, namely factual knowledge, conceptual knowledge, procedural knowledge, and metacognitive knowledge. In the aspect of factual knowledge gained an average score of 57.41 in the sufficient category, factual knowledge in detail can be seen in the excellent category totalling 6 respondents (6.06%), the good category 18 respondents (18.18%), the sufficient category amounted 48 respondents (48.48%), and fewer categories totalled 27 respondents (27.27%). For the aspect of conceptual knowledge gained an average score of 53.54 in the sufficient category, the acquisition of a score of the conceptual knowledge aspects in detail can be seen in the excellent category of 4 respondents (4.04%), the good category of 6 respondents (6.06%), sufficient categories amounted to 60 respondents (60.61%), and fewer categories totalled 29 respondents (29.29%). Then for the aspect of procedural knowledge gained fewer categories with an average score of 42.09, detailed procedural knowledge can be seen in the acquisition of good categories amounting to 7 respondents (7.07%), sufficient categories numbered 38 respondents (38.38%), categories fewer than 54 respondents (54.55%). While the aspect of metacognitive knowledge is fewer in the category with an average score of 39.73, the aspect of metacognitive knowledge in detail can be seen in the acquisition of good categories totalling 2 respondents (2.02%), sufficient categories amounting to 39 respondents (39.39%), fewer categories numbered 58 respondents (58.59%). Of the four aspects of knowledge about disaster mitigation of forest and land fires as a whole, the average score was 48.19 with a fewer categories.

Based on the acquisition of forest and land fire disaster mitigation knowledge data as explained in **Figure 1** above, the category of getting fewer. This lack of knowledge on disaster mitigation is caused by several factors, among which are the influence of age and cognitive development factors [7][8] of respondents as students in primary schools and patterns of socialization about the forest and land fire disaster mitigation which includes the teacher as a learning instructor [9] and the learning environment as a support for learning activities [10][11]. Therefore, the socialization process carried out by school residents and the community through the example of the congress on disaster mitigation, both before, during a disaster, and after a disaster of forest and land fires is urgently needed by students in elementary schools with the maturity of cognitive development still at the operational level of the concrete [23]. One thing that can be done is to use interactive learning media [12], and communicative [13], for example, the use of comic media [14] [15] and illustrated storybooks in learning activities, both in the classroom and outside the classroom. In addition, learning approaches that promote environmental literacy [16], local wisdom, and culture are very possible to provide basic knowledge to students about disaster mitigation of forest and land fires [17]. Then the pattern of socialization in

learning can be done with learning methods that involve active students, for example by conducting disaster simulation activities, conducting experiments, field visits, and routine training on disaster preparedness and response can also be included in extracurricular activities in schools [24].

Therefore, efforts to stimulate knowledge of forest and land fire disaster mitigation, it is necessary to design a substance for disaster mitigation materials that can be used in learning [5][18][19]. The material content in question is knowledge of disaster mitigation before a disaster occurs and during an emergency [20]. The material substance of expertise before forest and land fire disasters is as follows: providing warning and understanding to the community (including students) not to burn grass and debris around forests and land; carry out consuming activities at a predetermined distance, namely at least 50 feet from buildings and 500 feet from ground and forests[3][2]; ensure the fire is extinguished before leaving the burner and it is strongly recommended to clean the area of combustible material; and avoid burning activities when the weather is windy because strong winds are a significant factor in widespread forest fires [15][21].

Meanwhile, the substance of the material for knowledge during a forest and land fire disaster is as follows: do not leave the house if you do not have urgent needs; close access to the smoky air that can enter the house and keep the air in the room clean; turn on the Air Conditioner (AC) or air filtration, if you don't have air conditioning and it's too stuffy to stay indoors, look for a shelter provided by the disaster management task force; immediately see a doctor in case of heart and lung problems; provide adequate intake of water, fruits and nutritious foods; protect breathing with a mask/cloth every time you do outdoor activities; and washing hands and face after doing outdoor activities [21][13][15].

#### 4. Conclusion

Based on the data processing and data analysis that has been done, this research can be concluded that the knowledge of forest fire and land fire disaster mitigation students in elementary schools was identified in the fewer category with an average score of 49.19.

#### References

- [1] Murtianto H 2016 Potensi Kerusakan Gempa Bumi Akibat Pergerakan Patahan Sumatera di Sumatera Barat dan Sekitarnya *J. Geogr. Gea* **10(1)** doi: 10.17509/gea.v10i1.1667
- [2] PNPB 2017 *Buku Saku Tanggap Tangkas Tangguh Menghadapi Bencana*. Jakarta
- [3] Akbar A, Hadi R and Sabarudin M S 2011 Studi Sumber Penyebab Terjadinya Kebakaran dan Respon Masyarakat dalam Rangka Pengendalian Kebakaran Hutan Gambut di Areal Mawas Kalimantan Tengah *J. Penelit. Hutan Tanam* **8(5)** 287–300
- [4] Kastolani W and Mainaki R 2018 Does Educational Disaster Mitigation Need To Be Introduced In School? *SHS Web Conf* **42** 00063 doi: 10.1051/shsconf/20184200063
- [5] Prambudi D I 2018 Integrating Disaster Mitigation Education in the Elementary School Curriculum *Adv. Soc. Sci. Educ. Humanit. Res. (ASSEHR)* **147(2017)** 79–82 doi: 10.2991/icsse-17.2018.19
- [6] Metalin A, Puspita I, Guru P and Dasar S 2020 Metacognitive Analysis of Elementary School Students *Int. J. Elem. Teach. Educ* **1(1)** 1–8
- [7] Olufemi A A, Tokunbo O and Adediran 2018 Factors Affecting Students' Academic Performance in Colleges of Education in Southwest, Nigeria *Br. J. Educ* **6(10)** 43–56 doi: 10.11428/jhej1987.42.191
- [8] Farooq M S, Chaudhry A H, Shafiq M and Berhanu G 2011 Factors Affecting Students' Quality of Academic Performance: A Case of Secondary School Level *J. Qual. Technol. Manag* **7(2)** 1–14
- [9] Hermita N, Kumiawan O, Noviana E, Malik A, Rochman C and Suhandi A 2019 Investigating Concept Progression of Prospective Primary School Teachers in Indonesia *Int. J. Sci. Technol. Res* **8(12)** 1368–1371
- [10] Asfani K, Suswanto H and Wibawa A P 2016 Influential Factors of Students' Competence *World Trans. Eng. Technol. Educ* **14(3)** 416–420
- [11] Lin J W, Yen M H, Liang J C, Chiu M H and Guo C J 2016 Examining the factors that influence students' science learning processes and their learning outcomes: 30 years of

- conceptual change research *Eurasia J. Math. Sci. Technol. Educ* **12(9)** 2617–2646 doi: 10.12973/eurasia.2016.000600a
- [12] Qistina M *et al* 2019 Improving Science Learning Outcomes of Elementary Students by Using Interactive Multimedia on Human Order Materials *J. Phys. Conf. Ser* **1351(1)** doi: 10.1088/1742-6596/1351/1/012075
- [13] Noviana E, Kurniaman O and Affendi N 2020 KOASE : Disaster Mitigation Learning Media in Elementary School ( Study of Design and Development ) *Tadris J. Kegur. dan Ilmu Tarb* **5(1)** 11–25 doi: 10.24042/tadris.v5i1.5183
- [14] Toledo M A, Yangco R T and Espinosa A A 2014 Media Cartoons: Effects on Issue Resolution in Environmental Education *Int. Electron. J. Environ. Educ* **4(1)** 19–51doi: 10.18497/iejee-green.99250
- [15] Noviana E, Kurniaman O, Munjiatun, Sismulyasih S B N and Nirmala S D 2019 Why do Primary School Students Need Disaster Mitigation Knowledge? (Study of the Use of Koase Comics in Primary Schools) *Int. J. Sci. Technol. Res* **8(11)** 216–221
- [16] Noviana E *et al* 2019 Ecological Knowledge of Elementary School Students Through the Use of Ecoliteracy Teaching Materials in Curriculum 2013 *J. Phys. Conf. Ser***1351(1)** doi: 10.1088/1742-6596/1351/1/012071
- [17] Munjiatun, Noviana E, Zufriady, Erlisnawati and Antosa Z 2020 TAM integration in thematic learning; preliminary study of eco-culture learning in primary schools *Int. J. Sci. Technol. Res* **9(2)** 2042–2046
- [18] Alig R J 2012 Forest Management and Climate Change *For. Manag. Clim. Chang. a Lit. Rev* **2–3** 97–108 doi: 10.1016/B978-0-12-375067-9.00139-X
- [19] Putra I K, Saharjo B H and Wasis B 2019 Institutional Challenge on Forest and Land Fire Management at the Site Level *J. Ilmu Pertan. Indones* **24(2)** 151–159 doi: 10.18343/jipi.24.2.151
- [20] Weichselgartner J and Pigeon P 2015 The Role of Knowledge in Disaster Risk Reduction,” *Int. J. Disaster Risk Sci* **6(2)** 107–116 doi: 10.1007/s13753-015-0052-7
- [21] Yustina and Kapsin 2017 The implementation of Constructivism-Based Student Worksheets within The Theme ‘The Prevention of Land and Forest fire’ in Science Education for Seventh Graders in Riau *J. Pendidik. IPA Indones* **6(2)** 298–305 doi: 10.15294/jpii.v6i2.10573
- [22] Sudjana N 2009 Penelitian Hasil Proses Belajar Mengajar. Jakarta: Rajagrafindo Persada.
- [23] Cerry K 2019 The Concrete Operational Stage of Cognitive Development. In <https://www.verywellmind.com/concrete-operational-stage-of-cognitive-development-2795458>
- [24] Adiyoso W and Kanegae H 2013 Efektifitas Dampak Penerapan Pendidikan Kebencanaan di Sekolah terhadap Kesiapsiagaan Siswa Menghadapi Bencana Tsunami di Aceh, Indonesia *Majalah Indd* **23 (44)** 57-66 Diakses dari: <http://perpustakaan.bappenas.go.id>

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