

DOI: <http://dx.doi.org/10.33846/hn30605>
<http://heanoti.com/index.php/hn>



RESEARCH ARTICLE

URL of this article: <http://heanoti.com/index.php/hn/article/view/hn30605>

Development of Assessment Instruments for Disaster Resilient Campus Capacity

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ABSTRACT

Indonesia is a country that has many natural disasters, because the archipelago, many volcanoes and the sea. The number of deaths that occur can be caused by a lack of knowledge, community skills when facing disasters. When a disaster strikes, people become very panicked and chaos can trigger many victims. Therefore it is necessary to have the right strategy in the form of disaster mitigation. This study aims to develop instruments to assess campus capacity in the face of disasters. The instrument in this study was the development of a SMAB (Madrasah Schools Safe from Disasters) instrument developed by National Disaster Management Agency. The steps in developing this instrument were: 1) initial study; 2) determine sub indicators; 3) compiling the instrument item grid; 4) compile instrument items; 5) testing instruments, 6) carrying out analysis; 7) revision of the instrument; 8) formulate the final instrument from the results of the study. There were 4 strong campus capacities, namely building structure; knowledge, attitude, and action; campus policy; and preparedness. After testing the validity, there were 28 invalid items from 48 items. All reliability test items that were valid items were reliable. This means that it can be used to measure strong campus capacity

Keywords: capacity instruments; disaster mitigation; disaster resilient campus

INTRODUCTION

Background

This instrument is an extension of the *SMAB* (Madrasah Schools Safe from Disasters) instrument, which was initiated by the Ministry of Education and Culture. This is based on the fact that children in school have a high risk of getting a disaster ⁽¹⁾

Indonesia is a country that is susceptible to natural disasters, because its geographical condition is an archipelagic country and passed by a series of volcanoes. Disasters that have taken thousands of lives and damaged a lot of infrastructure. Therefore it is necessary to have the right strategy in the form of disaster mitigation ⁽²⁾.

Disaster risk reduction on campus needs to be done through systematic efforts to analyze and manage the factors that cause disasters. Conducted through analysis to increase campus capacity against disasters. In an effort to reduce disaster risk, research in universities, especially the Surabaya Ministry of Health Polytechnic, was carried out to encourage the creation of campuses, resilient to disasters, then we call them Katana (Disaster Resilient Campus). The *Poltekkes Kemenkes Surabaya* has declared a university with the advantage of disaster management. This thinking is certainly based on the assumption that students and campus residents actively participate in the community to carry out disaster risk reduction efforts.

The current paradigm of disaster management is concerned with community empowerment so that it is possible for the community to be the helper subject rather than being an object that needs help. The part of society that needs to be empowered is family⁽³⁾.

The purpose of campus disaster preparedness is to strengthen knowledge, skills and risk reduction behaviors for natural disasters and disasters through campus capacity utilization⁽⁴⁾.

Recognizing the importance of the foregoing it is necessary to plan various things in an effort towards Disaster Resilient Campus. In this research the capacity instrument was formulated towards Disaster Resilient Campus.

Restricting the Problem

Disaster risk is influenced by 3 factors, namely the potential hazard, the level of vulnerability, and the capacity possessed. In this study, it was limited to producing instruments on campus capacity factors in an effort towards the Disaster Resilient Campus.

Purpose

This research aims to produce campus capacity instruments in an effort towards a resilient campus.

Benefits of Research

1. As early as possible the campus community knows the potential risks that occur in each of them, so that priority can be based on community empowerment
2. Health workers can determine the priority of services carried out based on the mapping of priorities that they already have

Urgency of Research

1. *Poltekkes Kemenkes Surabaya* has launched disaster management as an institution superiority.
2. This research is also important to do next as a recommendation to find out the capacity map of each campus in higher education.

METHODS

This research was conducted on May-July 2018. This research had been carried out instrument testing in the Midwifery School of Magetan, *Poltekkes Kemenkes Surabaya*, Jl. S Parman No. 1 Magetan, East Java, Indonesia. The type of research that had been conducted was the development research (Research and Development) that had been produced by the instrument, which could be used to realize the Disaster Resilient Campus.

The steps taken to develop the instrument were:

- 1) An assessment of the capacity of the Disaster-resistant Campus is carried out;
- 2) Determined disaster resilient campus capacity sub indicators;
- 3) Compiled items on resilient campus capacity instruments;
- 4) Drafted instruments
- 5) Conducted trial instruments
- 6) Carried out analysis to determine priorities
- 7) Expert consultation carried out
- 8) Revision of the instrument
- 9) Final instruments formulated from the results of the study⁽⁴⁾.

The operational framework carried out in this study are as follows:

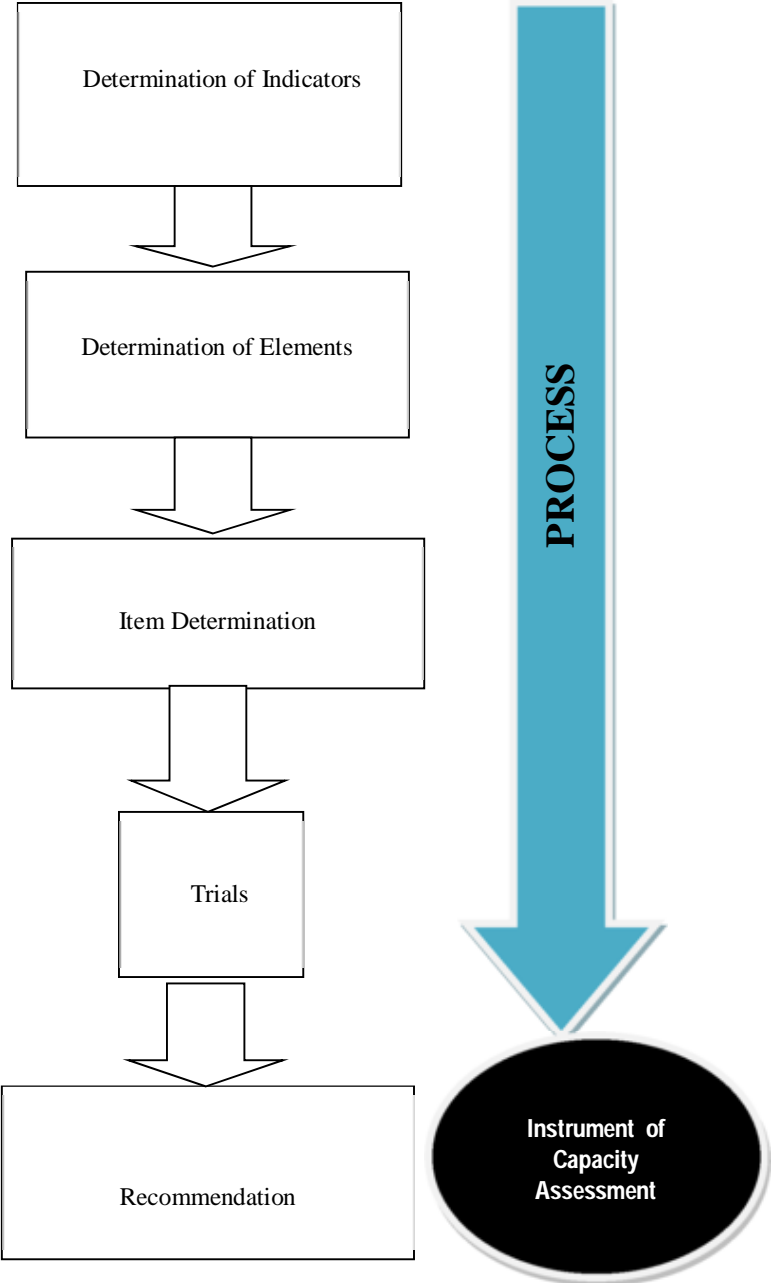


Figure 1. The framework of research

RESULTS

Research time was 6 months, from May 2018 to October 2018. The instrument trial was carried out at the Midwifery School of Magetan, Poltekkes Kemenkes Surabaya. The population in the trial of this instrument were all students of Midwifery School of Magetan. Subjects of research references were: *SMAB* facilitators and *Destana* (Disaster Resilient Village) facilitators. The expert judgment of this study came from CSD (Communication and Social Dynamic).

Steps for developing instruments were:

Determine the Preliminary Assessment of Capacity Indicators.

The literature search results to get an initial indicator of campus capacity, obtained several indicators. The conclusion was found 4 indicators of campus capacity, namely: a) building design; b) knowledge of attitudes and skills; 3) policy; 4) preparedness determine the element of the capacity indicator.

This step was carried out with FGD (focused group discussion) with practitioners namely facilitators of *Destana* and *SMAB* and experts.

Arrange the Items of the Instrument

To guarantee the content validity in compiling the items of the research instrument, it was expected to fulfill the rules of logic validity and face validity⁽⁵⁾. For this reason, this stage was carried out with 2 activities, namely: 1) drafting the points of the instrument; 2) conduct expert consultation.

The first step was to ensure that the logic validity was maintained, by drafting the items in the instrument. Then the draft was brought to the FGD with expert consultants from CSD (Communication and Social Dynamic). This instrument item was the forerunner of the campus capacity instrument items. The instrument items were then formulated to become instruments for campus capacity in the face of disasters.

The next step was to write the draft formula of the instrument along with its benefits. The number of statements was 48 statements with a share of favorable (+) of 43 items, while the unfavorable (-) were 5 items.

Test the Instrument

After the instrument items were obtained, the next step was to test the instrument. After the draft instrument was finished, the next step was to analyze the validity and reliability to determine whether the statement was valid and reliable or not.

Test Result Analysis of Research Instruments.

Analysis of Test Validity

Of the 48 items, the next process could be done as many as 20 instrument items, while the remaining (28) items could not be carried out further testing.

The determinant of the covariance matrix was zero or about zero. Statistics based on the inverse matrix could not be calculated and displayed as missing system values.

The results of the correlation analysis show that from 20 instrument items that could be tested for analysis, which had a significance level of 7 (seven) items only. These 7 items had the value of Corrected Item-Total Correlation exceeding the value of Cronbach's Alpha (0.73).

Analysis of Reliability Tests

The results of the reliability analysis of instrument items with Cronbach's Alpha Based on Standardized Items have a value of 0.864. Assume Cronbach's Alpha value = 0.730 > R table (0.654). This means that overall tests are reliable.

Furthermore, conducting consultations with expert judgment, namely consultation with experts.

Instrument Revision

From the results of data analysis, then revisions to instrument items were felt to need improvement. Revisions are based on opinions and input from:

- 1) Researcher's self evaluation results
- 2) Input from respondents testing the research instrument
- 3) Input from expert judgment
- 4) Input from practitioners

Formulate the Final Instrument

The next step is to formulate the instrument as the final format. Invalid instrument items are discarded while valid and reliable instruments can be used as instruments to measure the capacity of resilient campus disasters. Instruments that can be used as many as 50 items, while those that are disposed are 4 items.

DISCUSSION

The capacity of schools is resilient to disasters, emotionally influenced by: Building Structure; Classroom Design; Support for Facilities and Infrastructure; Knowledge, attitudes and actions; Campus policy; Resource Preparedness and Mobilization Planning ⁽⁴⁾.

Building Structure which is a capacity variable, namely Room Design; support for facilities and infrastructure; knowledge, attitudes and actions; campus policy; preparedness planning and resource mobilization. This condition can increase the vulnerability of the academic community in facing disasters ⁽⁶⁾.

The results of other studies indicate that the level of community preparedness in facing disasters is influenced by the level of formal education. The level of formal education affects community preparedness in the face of disasters. Communities with high school and tertiary education at the end tend to get a higher preparedness index compared to those who are educated in junior high school and elementary school. This highly educated campus community, in theory has got a capacity variable that supports resilience ⁽⁷⁾.

Communication facilities can provide signs and early warnings of disasters, guided communities do escape to the point of gathering ⁽⁸⁾. Some expert inputs that are very meaningful in compiling these instruments are about the mindset of composing instruments. The mindset of instrument items that were originally spread, became a mindset grouped according to the theme of similar instrument indicators. Some statements of instrument items also experienced changes so that the content of the statement items was more easily understood by respondents. Instrument points that are easily understood by respondents allow no differences in perceptions of content. The occurrence of bias is also possible when there are differences in perceptions of content statements ⁽⁹⁾.

The analysis of the results of the instrument trials shows that there are many instrument items that need to be corrected and improved if it is to be used to measure the Capacity of Resilient Disaster Campus. Capacity is a dividing variable that provides support for the low risk of campus facing disasters. therefore it should be noted. Theoretically the results of the research through the FGD and expert judgment show that there are indicators / variables that affect the capacity of resilient campus disasters, these indicators include: Building Structure; Knowledge, attitudes and actions; Campus policy; and Preparedness.

In terms of policies that need to be added is the existence of extracurricular activities, socialization to campus residents, conducting routine simulations and disaster mitigation training for campus residents. readiness of knowledge, attitudes and skills of campus residents will have a good psychological impact on campus community preparedness. The psychological conditions of campus residents influence preparedness in the face of dangers and disasters. Excessive panic, lack of calm in dealing with problems can lead to inability to think long in solving the problem of disaster risk reduction ⁽³⁾.

Campus policies that contribute to disaster preparedness include memorandum of understanding documents with agency offices related to disaster risk reduction. This is supported by research that is devoted to the community which has physical weakness causing a decrease in motor skills and movement of children under five, so that if they experience problems or disasters it is difficult to immediately carry out self-evacuation ⁽¹⁰⁾.

Campus preparedness is supported by research products, community service, collaboration with stakeholders (BPBD), evacuation routes and gathering points that are easily accessible to all campus residents. however, it is necessary to improve the accessibility of all campus residents. It is necessary to think about the

existence of laboratory space that supports and provides information on potential disaster risk reduction possessed.

Campus residents with special disabilities and vulnerabilities need attention. Because it will be difficult to carry out activities and avoid the danger that comes ⁽¹¹⁾.

CONCLUSION

1. Development of disaster resilient campus instruments is carried out through some strategic steps.
2. There are 4 indicators of disaster resilient campus capacity, namely Building Structure; Knowledge, attitudes and actions; Campus policy; and Preparedness.
3. Preparation of instrument items needs to pay attention to content validity and construct validity.
4. To be able to use this instrument, it needs to be refined, by paying more attention to the content through expert consultation and several instrument trials.

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