



Curriculum Development Training Improvement in the Competence Geological Disaster Mitigation Community Based



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Abstract

This research was motivated still many natural disasters in Indonesia. Geological disasters would always be an important issue in the Indonesian Nation as a consequence of Indonesia's geological conditions unique region, rich in natural resources but full of potential disasters. Disaster handling required the participation of all components of the nation led to the importance of the massive dissemination of disaster information to all levels of society. Unfortunately, the competence of members of the community who were still considered weak in disaster mitigation and counseling techniques became constraints the achievement of objectives disaster-conscious society. Increased competence was absolutely necessary and training could be selected as an option to improve competence. Research conducted using the method of research and development which was divided into three main stages. First, the needs analysis as a preliminary study, the second, the development of a model curriculum, and the third trials of the curriculum model to determine the effectiveness in improving the competence fields of geological disaster mitigation. This study was conducted to determine the curriculum development process proper training to improve competence in community-based geological disaster mitigation. The results showed that the model developed training curriculum based on the needs analysis proven effective in improving participants' competence to do counseling disaster mitigation. Pre-post test results showed an increase in the cognitive aspects of participants in Trial I and Trial II. Significant improvement occurred on the competence of counsel which showed a success rate of Trial II in improving the competence of counsel practice of training participants. Factors supporting the development of a model curriculum Extension Disaster Mitigation Training Community-Based Ground Motion were: (a) the competence of lecturers geological disaster mitigation; (B) the interests of members of community volunteers; and (c) the support of policy makers, while the factors that impeded the development of curriculum models were limited clump of competence training in geology, low educational background and knowledge of the geology and ground motion, and limited time.

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1. Introduction

The position of Indonesia is located on the "belt of fire" of the earth (ring of fire) makes Indonesia is prone to geological disasters. Indonesia has at least 500 volcanic cones, 129 of which are active volcanoes scattered volcanic line along the 7000 km that stretches from the island of Sumatra, Java, Bali, Nusa Tenggara, Banda until Halmahera and North Sulawesi. Just as volcanoes, earthquakes are natural disasters that would happen. Earthquakes can happen anywhere and anytime in this country, which may even be followed by a tsunami as occurred in Aceh a few years ago.

It is possible to experience the rural community vulnerability to disasters due to lower mitigation practices. This is according to [Caruson & MacManus \(in Kapucu et al., 2013\)](#) due to the low capacity of local governments and the financial resources of a solid economic base. Furthermore, the budget allocation of the regional and central government which is based on population size to be very biased when applied to rural communities so affected on efforts to develop and implement mitigation practices.

Community participation can be an important element in reducing the impact of disasters that from year to year tends to increase. The biggest advantage of community involvement in disaster mitigation is the development of self-confidence and increase capacity in disaster preparedness. Furthermore, community involvement will also produce practical solutions in disaster mitigation more effective and sustainable. Moreover, when established strong relationships among members of the public, then the ability to cope with disasters will be better as proposed by [Kapucu & Van Wart \(in Kapucu et al., 2013\)](#).

In Indonesian society, especially in the potentially disastrous, we can see communities staffed by volunteers from the community who care and have more attention in assisting the government in mitigating disasters, especially disasters that occur in their environment. These communities can be a guard at the forefront in disaster mitigation. To its position in the community and close to the source of the disaster makes the community can play an active role in the mitigation process, which is not only at the stage of post-disaster, but more important in the prevention of pre-disaster. Unfortunately, the ability of the volunteers who are members of the community over to the ability of rescue of disaster victims during and after the disaster, they do not have sufficient ability in pre-disaster mitigation.

Weak competence of the volunteers is caused by several factors, one of which is the limited access to disaster mitigation training. Government training institutions are still focused on the government apparatus as a target of training participants. Yet it must be recognized that education and training become an important means of improving the competence of the volunteers than formal education. Of course training program intended for the public is not necessarily able to use a regular training program that is used for the apparatus as participants. Participants target changes require changes in training programs. On that basis, this study was conducted to determine how the training curriculum was developed precisely to improve competence in community-based geological disaster mitigation.

Curriculum development is described by [Hilda Taba \(1962\)](#) with a seven-step curriculum development, the diagnosis of needs, formulation of objectives, selection of content, an organization of content, selection of learning experiences, an organization of learning activities, and determination of what to evaluate and of the ways and means of doing it. Taba doesn't start the process of curriculum development by setting goals but starts with a study on the needs for education in a society. [Laanemets & Kalamees-Ruubel \(2013\)](#) states that "Taba Also pays attention to the selection of the content and its organization with an aim to provide students with an opportunity to learn with comprehension". Both researchers assess the Taba approach is probably perfect for market-oriented education. Training as a form of education-oriented needs of the market (in this case the community needs in disaster mitigation) considered suitable for using this model.

[Zais \(1976\)](#) defines training as "a process by which teachers employing the validated discoveries of the behavioral sciences, manipulate learners and their environments in such a way that the learners efficiently acquired the prescribed behavior". Zais views that the learner is the raw material that will be processed with the treatment of

learning and the curriculum so that it becomes a final product expected. McNeil (1990: 121), "Training usually implies narrower than educating purposes. Training tends to look at the student's competencies in some occupation. "

The best training is training that provides the opportunity for trainees to practice and experience. Dregson as quoted Manondog (2000) in Dolotallas *et al.*, (2015) states that information a person obtained will not be known until someone interacts with that information, connect it with knowledge first owned, integrate it. Knowledge will become part of the on-going experience in using it. Trainees should be given ample opportunity to participate and display the corresponding topic experiences until they reach a principle to be applied in real situations.

2. Materials and Methods

Based on the research objectives to be achieved, this research was done by using a combination of qualitative and quantitative research approaches. A qualitative approach would be made to get an idea of the overall curriculum development process that was based on a deep understanding of various phenomena that were components of the training program from the perspective of the participants. Through this qualitative approach, their expected flexibility for researchers to be more creative in doing innovation.

A quantitative approach performed as the next step to find out the effectiveness of the curriculum developed to improve the competence of the training participants in the field of disaster mitigation ground motion. A quantitative approach was considered as an approach that was more appropriate for the level of effectiveness as something measurable.

Methods of research and development (Research and Development) had been selected because researchers assessed the method was the most appropriate to develop a curriculum training programs, increase the effectiveness of the curriculum incompetency improvement training participants, and produce standard training program based society which could be used as a reference implementation of the training in the future come.

Research and development conducted by researchers over to the product development existing curriculum with modifications following the change of target participants from government apparatus to be participants from the community. Under these conditions, used research a needs analysis (used survey methods or qualitative) that became the subject for the preparation of a model training curriculum. Meanwhile, to test the effectiveness of the training curriculum in order to use in society at large, conducted through quasi-experimental design with the pre-post test (quantitatively).

Needs analysis would be conducted as a preliminary study in this study and conducted in three stages. First, The Sector of Energy and Human Resources as an umbrella that represented all national strategic issues in the field of disaster mitigation. Second, the Profile of Potential Disasters to identify the real needs of disaster mitigation in a more specific area. Third, People in disaster-prone regions as a detailed portrait of the prospective participants of the training.

The results of the needs analysis were what would be the basis for the curriculum development training program. The involvement of the curriculum developers and experts in the field of mitigation was absolutely necessary for this process. Curriculum development could be a new curriculum or modification of the existing curriculum already owned by training institution.

Implementation of the curriculum in the form of training programs to be a means-tested to ensure the effectiveness and efficiency of the curriculum in improving the competence of members of the community in the field of disaster mitigation. This curriculum product trials would be conducted in two intakes (Trial I and Trial II) to participants who were all from the community. And should a cycle, then the results of the evaluation would be a reference for improvement/development of the next program. The evaluation would be done based on the value of pretest, post-test, and practical counsel. Control class could not be met in this study due to the limited number of training participants and frequency of training implementation that implemented.

3. Results and Discussions

3.1 Needs Analysis

The state based on the law is mandated to be responsible for protecting the all Indonesian Nation and the Country of Indonesia with the aim to provide protection of life and livelihood, including protection against disaster.

Act No. 24 of 2007 on Disaster Management states that everyone is entitled to social protection and security, particularly for vulnerable groups of society. In addition, each person is also entitled to education, training, and skills in disaster management.

Everyone, in disaster management also has an obligation to maintain a harmonious social life, balance, accord, harmony, and preservation of the environment, doing disaster management activities, and provide the correct information to the public about disaster management.

The responsibility of the government itself is set in the legislation to provide that the government responsible for committing a series of measures that include the establishment of development policies risk of disaster, disaster prevention activities, emergency response, and rehabilitation. A series of such efforts is the implementation of disaster management. Disaster management in situations of catastrophe does not occur include disaster planning, disaster risk reduction (including among others the introduction and monitoring of disaster risks, development of a culture of disaster awareness), prevention, integration in the development plan, the terms of disaster risk analysis, implementation and enforcement plan spatial planning, education and training, and disaster management technical standard requirements.

Bandung regency, West Java has a very high potential for disaster. Types of disasters that often occur in Bandung Regency are a flood, the ground motion, and the tornado. There are currently three such disasters have a tendency to increase in frequency and intensity, especially floods and ground motion/landslides increases by the increase of the rainfall.

Efforts by the local governments in order to mitigate the disaster is a disaster introduction to the public, but until now it is still very less because of budget constraints. Bandung Regency Government also has launched the Safe Schools Movement and has made thirty schools as a pilot project, but until now the Safe School Movement does not run properly as expected as a result of the lack facilitators owned by the district government. Communities can fill gaps in local government in this stage of pre-disaster mitigation.

Table 1 below shows the identification of current conditions and the condition expected results of a needs analysis conducted. The researcher recommends that training programs Extension Disaster Mitigation Ground Motion as an effort to fill the gaps findings.

Table 1
The current conditions vs. The expected conditions

Current conditions	Expected conditions
Indonesia disaster-prone region. The area potentially catastrophic ground motion in the district of Bandung is very spacious.	Disaster mitigation effectively and efficiently reduces casualties.
Mitigation conducted by BPBD Bandung regency more during and post-disaster especially relief efforts (rescue). Disaster prevention efforts are yet untouched by BPBD.	Efforts are disaster prevention should be a precedence.
The introduction of the disaster to the societies that carried by the district government until now has been less because of budget constraints.	The community has an important role in mitigating the pre, during and post-disaster.
Competence of community members in pre-disaster mitigation is still lacking.	Members of the community have sufficient competence in the field of disaster mitigation in every stage.
Safe schools movement stopped due to lack of facilitators owned by the district government.	Members of the community are able to act as the facilitator/educator disaster mitigation.

Some of the conditions that need to be considered in completing the analysis results of the need for this level are:

- a) Members of the community did not have the knowledge of geology as a basis for understanding the ground motion disaster. Disaster knowledge that owned by community members were limited only in rescue and handling during and after the disaster.
- b) Some community members had had experience as a counseling facilitator in various forms, materials, and methods, but the experience was not followed by the ability to arrange scenarios counsel as extension activities.
- c) Members of the community were derived from individuals who were highly diverse backgrounds and levels of education. Their daily job was also very diverse so that the timing of the implementation of the program (schedule and duration) which recommended need to consider the different job times of community members.

3.2 CurriculumDevelopment

Curriculum development based on the results of the needs analysis conducted through modifications to the existing training curriculum. The modification resulted in the curriculum in the training with the title Extension Disaster Mitigation Community-Based Ground Motion. The purpose of this training was the participants would be able to do counseling disaster mitigation ground motion after following this training. This training had a duration of 22 (twenty-two) hours and developed to be followed by training participants with minimal formal education senior high school or equivalent. The duration of training and prerequisites of participants was expected to accommodate the character of the community members who were targeted participants of the training.

Curriculum Education and Training Counselor Mitigation Ground Motion Community-Based consists of three (3) units of competencies, 8 (eight) elements of competencies, 27 (twenty-seven) performances criteria which were poured into three (3) training eyes (Table 2).

Table 2
Training courses on training extension disaster mitigation community-based
ground motion (*Trial I*)

No.	Training Eye	Hour Lesson (HL)	
		Theory	Practical
	Introduction to Geology	3	4
	Ground Motion Mitigation	2.75	2.25
	Extension Ground Motion Mitigation	2.25	7.75
		8	14
	TOTAL HL		22

A curriculum which developed over hours of practice had more than 60%, especially the Eye Mitigation Counseling Training Ground Motion (2:25 / 7.75 HL). The training eye had greater quality than another training eye because the core competency to be improved through this training program was competency "counsel". It was intended to provide an "experience" to the participants. Teaching plans prepared by teachers with reference to the curriculum developed showed participant opportunity "to experience" real experience as an educator. Content displayed in the extension Training courses Introduction to Geology Disaster Mitigation Ground Motion could be further developed independently by the participants as well as through participation in education or other geology technical training.

The trial I Training Curriculum Extension Disaster Mitigation Community-Based Ground Motion made to participants from members of the community gave the results of the average value of post-test was 60 for the highest value and lowest 91.7 50. This showed an increase in the average value of pre-test amounted to 19.6 with the highest increase of 45.8 and the lowest 8.3. Meanwhile, for the value of the counsel practice, the average value was 2.86 (* Scale 1-4) with the highest value of the practice of counsel was 3.14 and the lowest was 2.43.

Based on the results of tests on the Extension Training Curriculum for Community-Based Mitigation Ground Motion (*trial I*), the value of the practice of counsel should receive more attention and be considered for a review of the syllabi and teaching plans. The changes also needed to be carried out following the pre-post test results,

particularly those elements specific competency that could not be answered correctly by more than 60% of the population of training participants.

Changes to the curriculum *trial I* produced Curriculum Training Extension Disaster Mitigation Community-based Ground Motion (*trial II*) which was still consist of three (3) units of competency, 8 (eight) elements of competence, but composed of 28 (twenty-eight) performance criteria labor poured into 3 (three) training eyes with duration increased to 31 (thirty-one) hours lesson. Extra performance criteria "*The Recognized Geological Structure*" the element of competence "*Understanding the Phenomenon of Geology*: a follow-up post-test result that indicated that the understanding of the average participant in the discussion of the geological structure".

Referring to the findings of the *trial I*, additional hours of lessons conducted in almost all subjects, especially in the eyes of *Disaster Mitigation Counseling Training Ground Motion*. For an additional allocation of time on training, the eye was conducted to the practice plan prior counsel and microteaching practice counsel. This was expected to enable the participants to practice counseling. Meanwhile, additional hours of lessons Training courses Introduction to Geology primarily on classroom practice hours for KUK "*The Recognized Geological Structure*" by the addition of learning through the use mockups of the geological model. Training eye Mitigation Ground Motion also given additional hours of theoretical lessons and practices almost doubled as a response to the findings of the still weak mitigation as content knowledge in the practice of counsel. Changes in hours of lessons for each training eye are shown in Table 3 below.

Table 3
Comparison List Eye and Hour Lessons in the Training of Training Extension Disaster Mitigation Community-Based Ground Motion *trial I* and *trial II*

No	TRAINING EYE	<i>Trial I</i>		<i>Trial II</i>	
		Theory	Practice	Theory	Practice
	Introduction to Geology	3	4	2	6
	Ground Motion Mitigation	2.75	2.25	5	5
	Extension Ground Motion Mitigation	2.25	7.75	3	10
		8	14	14	21
	TOTAL HOUR LESSON		22		31

Trial II showed the results of the average value of post-test was **61.96** (*trial I* = **60**) with the highest value of **95.8** (**91.7**) and the lowest was **33.3** (**50**). This showed an increase in the average value of pretest **16.34** (*trial I* = **19.6**) with the highest increase of **41.7** (**45.8**) and the lowest was **-4.2** (**8.3**). Meanwhile, for the value of the practice of counsel, the average value was **3.34** (*trial I* = **2.86**) with the highest value of practice counsel was **3.5** (**3.14**) and the lowest was **3.07** (**2.43**).

Comparison of the pretest, post-test, and counsel practices *trial II* and the *trial I* showed an increase in average value. The average value of the practice of counsel increased significantly from **2.86** at the *trial I* became **3.34** on *trial II*. The increase in the average value of the practice of counsel showed the impact of adding the allocation of time for practice plan prior counsel and microteaching practice counsel. Measurement of the coefficient of variance of the population (Table 4) the *trial I* and *trial II* showed that the degree of homogeneity of the value of the practice *trial II* (**0042**) was higher than the *trial I* (**0.108**) which was mean that the ability to practice counsel *trial II* more equal than participants *trial I*.

Table 4
The coefficient of variance of the pretest, post-test, and the practice of counsel at trial Curriculum Model I and I

	PreTest Angk1	PostTest Angk1	PreTest Angk2	Post Test Angk2	Nilai Praktik1	Nilai Praktik2
<i>Std. Deviation</i>	15.1609	12.9229	14.4643	18.6883	.3098	.1408
<i>Varians P</i>	206,4	150	183,064	305,507	0,08	0,02
Average Value	42,6	60,84	45,63	61,96	2,86	3,34
Koefisien Varians	3,558897	2,12408	3,16991	3,016188	0,108322	0,042156

3.3 Discussion

Needs analysis as a preliminary study in a series of research and development conducted by researchers resulted in a recommendation to increase the competence to do counseling community members in disaster mitigation ground motion. The recommendations led to the identification of existing programs and geological disaster mitigation field narrowed to the existing training curriculum under the title of Extension Training Disaster Mitigation Ground Motion.

Modifications then performed with reference to the findings of the needs analysis and the first change made by the addition of "*community-based*" in the title of the existing training curriculum. The changes are based on changes in participants originally targeted government officials become members of the community from the community. Changes target these participants later that become the basis of changes in the components of the existing curriculum.

The main changes subsequently made to the circuit unit includes elements of competence and their performance criteria, which by Yuvaraj (2011), expresses as a package of knowledge, skills, and attitudes needed to do a job effectively and efficiently. Furthermore, the results of a needs analysis become the basis for the adjustment of methods, media, and the time required for each training so that the training could be followed by another well. It is as described by Gardner & Winslow (in Gass, 2012) that a needs analysis aims to provide the necessary information to make a better training can be adapted by trainees.

Researchers developed a pattern as noted above approach Inductive Model (Model I) on the concept of needs analysis put forward Kaufman & Harsh (in Kaufman, 1972). Inductive Model as the name implies is done through the process of induction. Objectives and learning outcomes obtained from stakeholders. Objectives and learning outcomes were the basis for the preparation of the program. Correspondingly, the researchers developed a model that showed the curriculum was based on learning objectives as a result of the needs analysis. The purpose of learning was not known or predetermined but emerged from the perceptions and concerns of stakeholders towards a gap between the current conditions with the expected conditions.

The model I is allowing the emergence of the disadvantage of the longer and more complex process (Kaufman, 1972). The process was more complex felt by researchers at the start of the data collection process to verify the findings to stakeholders which would require a longer time. In practical conditions, the time will be a major consideration in conducting a needs analysis model.

The advantages obtained Model I at the time of applied research was the belief that learning objectives could be completely in accordance with the priority needs, the needs of macro at sector level and at the level of smaller, in the area of potentially catastrophic and the social community.

Table 5
Inductive Model proportionality (Kaufman & Harsh, 1969 in Kaufman, 1972: 33)
with a model by researchers

<i>Model I</i>	<i>Step</i>	<i>Model Developed</i>
<i>Identify extent behaviors (*)</i>	1	Identifying current conditions and expected conditions (*)
<i>Compile and classify behaviors into programs and behaviors expectancies (**)</i>	2	Determine gaps and recommendations follow-up program (**)
<i>Compare to existing broad goals</i>	3	Identify and compare with existing programs (**)
<i>Reconcile discrepancies (*)</i>	4	Deciding the changes to the existing program (**)
<i>Set detailed objectives (**)</i>	5	Determining units and elements of competency and performance criteria (**)

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<i>Develop educational program (**)</i>	6	Develop curriculum and its equipment (**)
<i>Implement educational program (**)</i>	7	Implementation of curriculum (**)
<i>Evaluate educational outcomes (*)</i>	8	Curriculum evaluation based on the learning outcomes the training participants (**)
<i>Revise (**)</i>	9	Curriculum Revise (**)

* conducted by educators and representatives of members of the community sub facilitated by educational institutions

** performed primarily by educators

The involvement of lecturers in the process of needs analysis was expanded starting from the stage of determining gaps and recommendations for further action. Furthermore, the involvement of lecturers in most phases of development of this curriculum allowed the alignment of the curriculum developed with an implementation plan that was written in a trainer's compiled teaching plan script. The deviation between the curriculums as the curriculum in the implementation plan is expected to be minimized. This is in line with the statement [Kobiah et al., \(2015\)](#) that the participation of teachers in the curriculum development process to improve their ability to interpret the philosophy, educational purposes, as well as the general and specific objectives of the curriculum. Management policies must give more attention to the experience and ability of teachers in the process of curriculum development.

Related to this, [Laanemets & Kalamees-Ruubel \(2013\)](#) mentions that in the Model Taba with the process of inductive, the curriculum is developed with the approach of teachers so often called *grass-roots approach*, teachers have more attention to the needs of the students so that the teachers are supposed to be making up the curriculum and implementing it.

The curriculum developed in this study has four components as proposed by [Murray Print \(1993\)](#) is a planned learning experience, offered by the institution, compiled in a document, and implemented the training program. The curriculum is implemented in the form of organizing elements interconnected start of the objectives, content, learning experiences, methods, and evaluation. This is in line with the statement of [Lunenburg \(2011\)](#) on the organization and the relationship between the five elements of Curriculum Model Taba interconnected namely objectives, content, learning experiences, teaching strategies, and evaluative measures so that a system of teaching and learning occurs.

In the context of experiential learning theory ([Healey & Jenkins, 2007](#)), researchers associate the "extension" and "mitigation" to the field of education studies and geography in the group Accommodators (Table 5). This means that the curriculum developed for this training program should consider learning conditions which enable learners to gain practical experience. Correspondingly, researchers seek to provide "experience" in terms of counsel to the participants through this training program.

In operation, teaching plan compiled by lecturers with reference to the curriculum showed participants an opportunity "to experience" real experience as an educator (learning experiences). New things were added in this curriculum and different from existing programs was the practice of counsel was designed so that in accordance with the real conditions of the extension, including by presenting the audience from the community directly. It is intended that the training participants could truly "experience" the atmosphere significantly counsel. The process of "experiencing" also amounted may be prepared by researchers and lecturers involved in the implementation process (*trial I and II*) in the eyes of other training by providing practical quality greater than the quality of theory in the middle of the limitations of the time training program.

Table 6
Grouping of science in the ELT
(Nulty & Barrett, 1996, in Healey & Jenkins, 2007)

Accomodators	Divergers
Commerce	English
Demography	History
Education	Linguistic
Environmental studies	Philosophy
Geography	Sociology
Political Science	
Public Policy	
Convergers	Assimilator
Applied economics	Astronomy
Applied physics	Chemistry
Art history	Classics
Computing	Earth Sciences
Demography	Economics
Engineering	Mathematics
Forestry	Physics
Law	Theoretical physics
Medical research	

The model curriculum developed has practice hours over **60%**. Training eye Mitigation Counseling Training Ground Motion even has a clock comparison theory/practice amount **2:25 / 7.75** HL. The training eye is given time allocation more than any other training eye because the core competencies to be improved through this training program was competency "counsel". Quality Training courses Introduction to Geology Disaster Mitigation Ground Motion are relatively small considering that the content of the training eye can be further developed independently by the participants as well as through participation in educational and other technical geology training.

The foregoing thing above is in line with the statement [Mayo & DuBois \(1987: 2\)](#) that the emphasis of a training program is on skills than on knowledge, although knowledge can only be a requirement for the development of a skill. It is also as stated by [Hughey & Mussnug in Masadeh \(2012\)](#) that "*training is best supplemented with practical, hands-on experience*". Trainees not only listen to the teachers that will soon be forgotten, but trainees will also be able to do something when in training they have to "do", it means more practice than theory.

One of the thoughts generated in FGD at this stage of the training needs analysis is must be done with the fun, the teachers must also consider teaching methods that lead to the creation of a pleasant atmosphere. This is consistent with the statement of [Taylor \(2003: 104\)](#), "*Help them enjoy the experience of learning so that they will feel like learning more when the training course has finished.*"

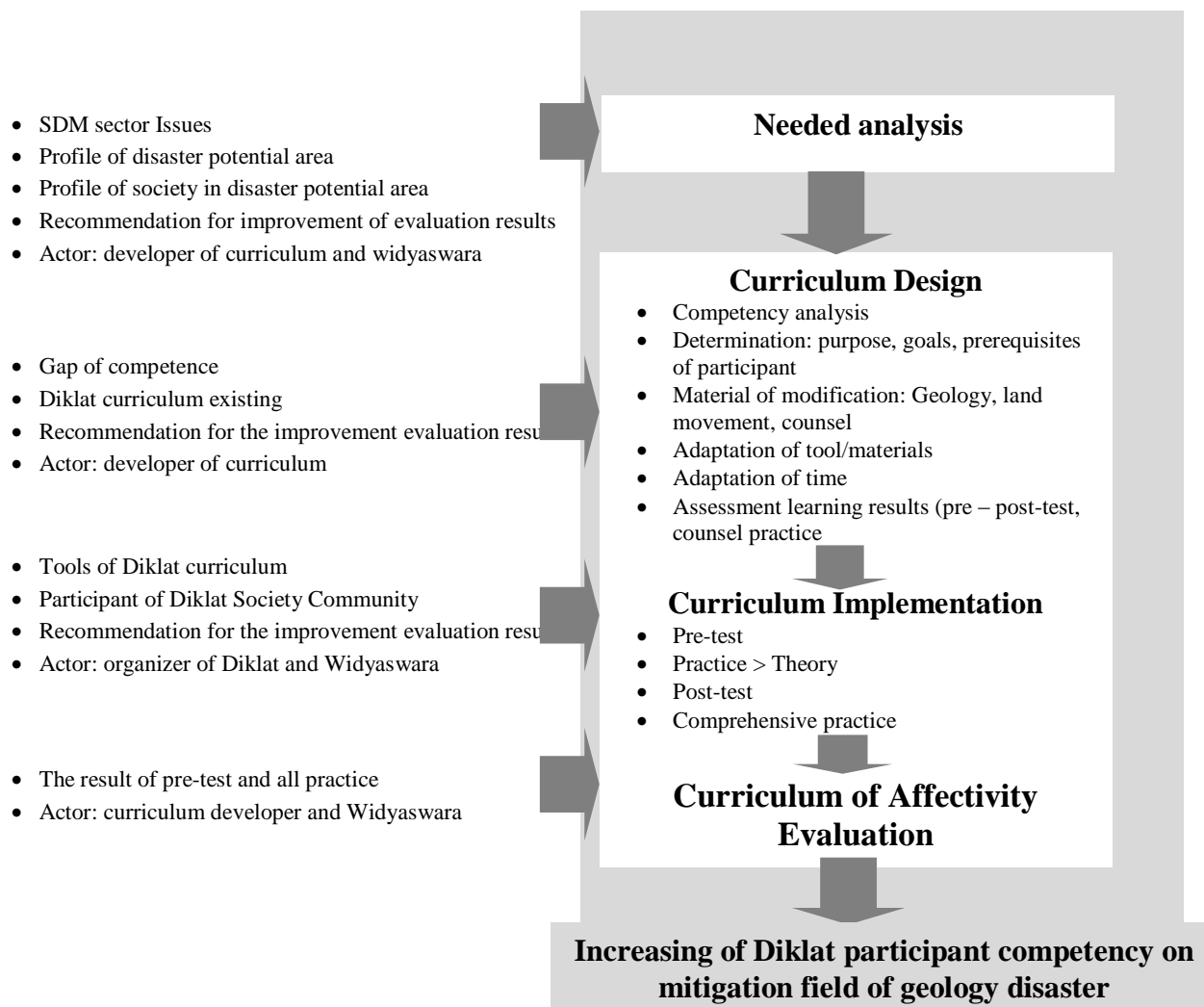


Figure 1. Flowchart of Curriculum Development Model Training Extension Disaster Mitigation Community-Based Ground Motion

A trial performed produced findings that training curriculum and tools arranged proven effective in improving the competence to do counseling geological disaster mitigation. The effectiveness of this curriculum will occur only in the conditions described in the results of the needs analysis. Changes condition that from the aspect of legislation and government policies, the condition of the affected areas, and community profiles will impact the need for re-modification of the curriculum has been arranged.

4. Conclusion

Development of curriculum model in this study was based on the needs analysis conducted in a comprehensive manner specified stages of researchers. The phasing intention was that the researchers were able to identify the needs and gaps thoroughly. The results of the needs analysis that was the basis of determining goals, objectives, contents, methods, media, until the evaluation process of the training program recommended on the results of the needs analysis.

The evaluation process through the pre-post test as a means for identifying an increase in the cognitive aspects of the participants showed an increase of trial I and trial II. Significant improvement occurred on the competence of counsel which showed a success rate trial II in improving the competence of participants of the training in the

practice of counsel. This means that the training objectives can be achieved proven curriculum model can effectively improve participants' competence in the field of mitigation.

This success was inseparable from the participant's motivation to develop themselves were motivated by integrity and loyalty to community organizations. The readiness of teachers in learning to understand the curriculum as a guideline and reference for the planning of teaching was also a determining factor.

Time was a barrier in education and training could be done within that ideally, suits the needs of competence. Community members who came from very diverse types of work had limited time and for different. Another obstacle was the scarcity of practice locations that have good geological objects and complete in Bandung and surrounding Regions. Limitations of this practice location made the training participants difficult to "experience" in good geology. The use of the mock-up model, simulation or the video had not been able to replace the geological outcrops in the field.

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Statement of authorship

The author(s) have a responsibility for the conception and design of the study. The author(s) have approved the final article.



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