



Challenges and Barriers in Disaster Mitigation Education in Banyumas Regency

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Abstract

BACKGROUND: Indonesia has very huge natural disaster potential risks. To reduce the impacts of disaster, proper and massive mitigation education toward society is very imperative. Disaster mitigation education has been carried out in both formal and non-formal sectors. While National Disaster Management Agency (Badan Nasional Penanggulangan Bencana) has educated the public massively, in formal sector there has been only regulation and guidance from the Ministry of Education. However, its implementation in local areas still encountered many obstacles and challenges, especially in Banyumas regency.

AIM: This study aims to explore disaster mitigation process education in Banyumas Regency.

METHODS: This qualitative study recruited 11 participants who involved in disaster mitigation process using purposive sampling method. A focus-group discussion (FGD) and in-depth interview method were adopted to explore data regarding disaster education. Researchers used a semi-structured interview form consisting of ten questions during the data collection process. Literatures related to disaster mitigation regulations were also critically analyzed. Data were recorded, transcribed, discussed, and categorized manually.

RESULTS: As a result, the study revealed two main themes in disaster mitigation education: lack of law enforcement in implementing disaster education and lack of people's awareness for disaster education. The categories under the themes are disaster education regulation, lack of standardized disaster guideline and curriculum, and lack of disaster education awareness and education approach.

CONCLUSION: Educating disaster mitigation through formal education from the early stage is very significant. Substantial matters need to be well constructed are guidelines for implementing disaster education in schools as well as curriculum based on the concepts and implementation, correct construct, and subject matter. Encouraging the awareness of disaster preparedness since an early age is important to instill the right techniques.

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Introduction

Disaster mitigation education is very crucial because Indonesia as an archipelago country possesses huge natural disaster risk. Indonesia in the past 10 years is climate related. Based on the characteristics of the disaster hazard, there were 13,010 people who died as a result of the disaster, 33 million people were affected during 2009–2018, where floods, landslides, earthquakes, and tsunamis caused the largest deaths [1]. By proper mitigation and disaster risk reduction (DRR) activities, the impact of disaster can be reduced [2]. Before the disaster hit the area, appropriate planning is a key factor [3], [4]. First and foremost are disaster mitigation educations to prepare people facing natural disasters.

In Indonesia, disaster education for public is usually conducted by a centralized national department, National Disaster Management Agency. It has office branches; Regional Disaster Management Agency (Badan Penanggulangan Bencana Daerah [BPBD])

in each province and regency. Moreover, schools and universities pass disaster mitigation knowledge through a set-up curriculum in classes [5]. In addition to that, schools work with a government department, namely, Indonesia Red Cross (IRC) (Palang Merah Indonesia [PMI]) to educate and train school students in an extra curricula program, named Youth Red Cross (Palang Merah Remaja). Furthermore, NGOs such as Muhammadiyah Disaster Management Center (MDMC), Ambulance 118, and Red Crescent also work side by side with BPBD to educate public in non-formal sector.

Disaster mitigation education is very significant to make the society knowledgeable and fully aware about proper mitigation process. Society needs to be aware of and knowledgeable regarding the risks of disaster in their surrounding and to be prepared on how to anticipate and act during disaster [4], [6]. Banyumas, one of regencies in Central Java Province also has a huge risk of natural disaster, that is, As Earthquake and flash flood risks. In the northern part of the regency, stands tall Mount Slamet (3428 m/11,247 ft above sea

level), an active stratovolcano which erupted in 2014. Half of Banyumas area is hilly and valley, making it prone to landslide. Moreover, there are many rivers that have its upstream from Mount Slamet flow through many areas in the regency. One of the rivers very well-known is Serayu that flows 181 km through 5 regencies, including Banyumas and ends in the Indian Ocean [7]. The existence of those rivers is very likely to cause flash flood. Furthermore, Banyumas is located very close to Indian Ocean which makes it vulnerable to the risk of tsunami. With these potential of natural disaster risks, disaster mitigation education needs to be conducted before disasters occur.

To date BPBD has conducted its function in educating Banyumas people regarding disaster risk areas, individual and group survival methods, methods of reaching help, etc. However, BPBD education program does not reach to formal or academic level. School students' education, such disaster education, from elementary school until university level falls under Ministry of Education and Culture responsibility. Based on the pilot study conducted to four public and private schools' curriculum, disaster education has not been taught formally in the class. Although the schools know there is a Ministry mandate to deliver the subject but the schools do not regard it as a priority and are not aware that Banyumas school children need such knowledge.

Through disaster education, it is expected that DRR can be achieved and a broader objectives and can be introduced earlier to all schoolchildren. In line with this, the Minister of National Education issues the Circular of the Minister of Education (National Ministry of Education/Kemendiknas) No 70a/MPN/SE/2010 [8] on the Mainstreaming of Disasters Education into Schools. This policy shows that local governments shall be able to adopt and develop schools based on disaster education programs.

Giving the right knowledge and input via education will allow ones to be equipped with useful knowledge in term of preparedness. With many uncertainties about what our future lies, we people may not be able to predict the future precisely [9]. We believe that disaster education can make a difference. Through disaster education, it is expected that DRR can be achieved and a broader objective and can be introduced earlier to all schoolchildren and universities.

The importance of disaster education is how schoolchildren can be directly involved in disaster management [10], [11]. This effort shall be carried out at the early stage through formal education, namely by preparing a curriculum, based on concepts and implementation as well as the importance in structure and subject matter [12], [13]. Encouraging the awareness of disaster preparedness since an early age is important to instill the right techniques refer by the expert, as to maintain the basic safety from the risks of disasters in the minds of schoolchildren [10], and should be able to deliver the right and most effective if carried out

continuously through school curriculum [11], [14]. Thus, fundamentally promoting disaster education since an early age is a step and initiative towards a community that constantly aware of disasters [15].

Disaster education is an essential link to build human morality to allow individuals to uphold environmental ethics as well as to willingly act and participate in finding fundamental answers to disaster management. Therefore, the government is actually required to carry out its obligations concerning education in accordance with local conditions. To date, there has not been a research found whether those departments in Banyumas regency have conducted precedented and proper measures to prepare in time of disaster occurrence.

From our preliminary study, it was found that the implementation of disaster mitigation education had not been carried out in a structured and programmed manner in elementary schools, junior high schools, and high schools. Whereas, at the university level only majors related to health which have taught disaster mitigation course to the students. Thus, it is necessary to conduct research to explore further the implementation of disaster mitigation education in the formal sector including its the challenges and obstacles.

Methods

This study employed a qualitative method with a descriptive phenomenology approach to explore the phenomenon [16]. This study aims to explore disaster mitigation education, its challenges and barriers in Banyumas regency. A focus-group discussion (FGD) was implemented with parties who have shared-responsibility and experiences in disaster management, followed by an in-depth interview as the method for data collection [17]. The participants were interviewed in a group and questioned with a semi structured interview form consisting ten questions thus, leading to a focused results. The interview with the experts and parties involved is able to provide us with the real problem and insight of the situation.

Participants' demographic

Eleven participants from Banyumas regency were enrolled in this study using purposive sampling method. All participants were qualified as having 3–15 years of experience in disaster mitigation process and disaster education teaching. Eleven participants, each representing BPBD, Indonesian National Guard (TNI), MDMC, and Ambulance 118 joined the discussion. Furthermore, representatives from IRC, Muhammadiyah elementary and secondary schools as well as public high school were enrolled in the in-depth

interview session. On top of that, two lecturers from the Faculty of Geography, Faculty of technic and Sciences and the Nursing Department Faculty of Health Science, Universitas Muhammadiyah Purwokerto were also involved to give additional insight regarding disaster mitigation process education.

Focus group discussion and interview

A 1-time FGD was held at Universitas Muhammadiyah Purwokerto in October 2019 for 120 min. A trained moderator led the discussion using a semi-structured interview guideline. The interview guide format allowed the moderator to explore participant' responses further while maintaining consistency across the focus group. Five questions were addressed in the FGD to explore their roles including experiences of the participants in disaster education and during disaster emergency period. All participants had received the list of the questions 2 days before the designated day.

Three research assistants acted as a facilitator, an observer, and a video recorder, respectively. Their responsibilities were to listen, take notes, and observe the situation during the discussion. One research partner from Universiti Teknologi PETRONAS (UTP), Malaysia was also involved as an observer over the Skype medium. An in-depth interview through phone call was further conducted to gain more understanding of their detailed roles and experiences. Both the group discussion and interviews were recorded and transcribed verbatim by a research assistant and then checked for accuracy by the second and third researchers.

In-depth Interview

To gain more detail information regarding mitigation education, we conducted an in-depth interview process toward several participants. An in-depth interview process allows this research to understand the uncovered and real situation that face with the most current issue. We involved participants from IRC, BPBD, and teachers from elementary, secondary, and high schools. A semi-structured questions form was used to guide the interview. The interview lasted between 45 and 100 min through online video call and Zoom. Other participants who were invited for an in-depth interview are three teachers from Muhammadiyah elementary school, Muhammadiyah secondary school, and public high school were given 40–60 min of interview.

Data analysis

Data were collected through FGD and semi-structured in-depth interviews. In this study, it is confirmed that there is rigor and trustworthiness,

namely, credibility, transfer ability, dependability, and conformability. Researchers and the team have expertise knowledge in disaster matters, in making transcripts checked by the team and also participants regarding the truth. This research can also be applied elsewhere with a transferability approach. To ensure the results of the dependability process, carry out discussions with the team and experts related to the research themes and sub-themes for the conformability aspect through FGD activities and deep interviews.

Colaizzi (1978) approach was used to analyze the data. The steps are as follows: (1) Read all the transcript results repeatedly, (2) look back at data transcripts and select statements that are significant, (3) formulate the meaning or meaning of important statements, (4) categorize these meanings into themes according to participants' expressions, (5) form a description of the phenomenon, (6) identifying the fundamental structure, and (7) confirming or re-validating the description of the phenomenon to the participants [18].

Data analysis was conducted in several steps. The first step was reading the whole written recorded data to get a general understanding of the data. The reading process was done independently by three researchers, who later came together to discuss their opinion of the text. Furthermore, the researchers discussed about the meanings of words, categories, and themes related to the aim of the study. All authors read the data after they were transcribed verbatim. Two of the authors coded the transcribed text independently of each other. Quotes directed by the aim were extracted and condensed into codes. From the codes, main categories and subcategories were internally homogeneous and externally heterogeneous. All data from individual interviews were analyzed the same way as the data from FGD. The final interview with secondary school teacher reached the level of saturation where the data provide same information as the high school teacher. Consensus discussions were conducted continuously in the research groups (between UMP and UTP team) where the teams discussed all categories until all authors shared the same understanding. The agreement over all categories was achieved. Each category was summarized, and quotes capturing essential information were selected to support the category. The quotes were then translated into English and then translated back into Indonesian to hold the same and accurate meaning.

Results

The findings are presented in two thematic topics from the data analysis, namely: Disaster awareness and lack of law enforcement in implementing

disaster education. The themes were derived from both FGD as well as in depth interview and the key results are presented in Tables 1 and 2.

Table 1: FGD category and Theme (A)

Code	Category	Theme
<ul style="list-style-type: none"> • Surat Edaran Pemerintah: Ministry of Education in 2007 to provide disaster education • BPBD regulation in 2012 to build Sekolah Siaga Bencana and safe school toward disaster • Banyumas mayor issued regulation in 2011 regarding disaster management team • MoU between IRC and Ministry of Education in providing red cross education including disaster preparedness • Informing public and school students • Coordinate all parties related to disaster mitigation once in 3 months • Provide socialization to disaster prone villages: mostly given to prominent community leaders • BPBD has disaster education guideline, however the guideline consists of general materials • There is no specific curriculum for disaster education in the public secondary schools and public high schools • Disaster education is taught in Environmental Education in elementary school • The curriculum of disaster mitigation is based on learning by doing • There are too many academic activities in high school • Disaster education is not the priority at the moment • School's principal changes frequently therefore their curriculum priority is often different from each other • There is no a specific policy from the principals to implement the Education Ministry's regulation regarding disaster education • There are only some private elementary schools which have particular policy from the principals for organizing disaster education in the classroom 	<p>Lack of Disaster education regulation</p> <p>Lack of standardized disaster guideline and curriculum</p> <p>Disaster education has not yet been a school's priority</p>	<p>Lack of law enforcement in implementing disaster education</p>

Table 2: FGD Category and Theme (B)

Code	Category	Theme
<ul style="list-style-type: none"> • Disaster education is not integrated into secondary schools and high schools' learning and teaching method • Disaster education is only given as an extra class teaching program • Ministry of Education regulation is regarded only as a government appeal • Schools do not receive any sanctions when they do not implement the ministry's regulation • BPBD informs public through WhatsApp group, website, text messaging, radio relay, call center, and walkie talkie • BPBD provide regular education and simulation, once in a week to different places • NGOs provides education and training to their members • Hospitals provide education and training to their disaster respond group and hospital call center for public • Practice and simulation disaster mitigation, things to do to evacuate individuals and other people • IRC, school administration and students collaborate to perform Sekolah Siaga Bencana program in 3 times training and simulation • Elementary school holds class teaching, laboratory, and class outing program • Education equipment: hardcopy pamphlet, text book miniatur, school areas' that are at risk during disaster, sign board evacuation routes and assembly points • IRC released some game education application: salifah game, hazzard game, and game tanah 	<p>Lack of disaster education awareness</p> <p>Lack of Education approach and equipment</p>	<p>Lack of implementation disaster education</p>

The findings regarding the implementation of disaster education in Banyumas regency are as follow:

Lack of law enforcement in implementing disaster education

The categories supporting lack of law enforcement in implementing disaster education theme is disaster education regulation, lack of disaster education regulation and curriculum dan Disaster education has not yet been a school's priority. In regard to policy and regulation, there are two parties involved in disaster education: IRC dan BPBD. While IRC takes part in education school students through school program, BPBD educates society, both group education and training in public spaces. This was conveyed by a participant from IRC:

".....For policies at the education level, there may have been from the Ministry of National Education, namely in 2010, if I'm not mistaken, the Ministry of National Education gave a letter of assignment. to local governments to carry out disease prevention activities in schools, that is the first basis (our movement). IRC itself has been carrying out this activity since 2007 to create a Disaster Preparedness School...."

Based on the rules and regulations, disaster management education is an important subject to be taught in schools and communities. All parties involved are responsible for teaching disaster management. This is in accordance with the participant's statement from BPBD,

".....Our first task in the context of disaster management is to make announcements and we always give lessons, both for informing to the community and for evacuation...."

The Indonesian government issued the Ministry of Education's Policy Letter No. 70a/SE/MPN/2010 concerning the obligation of disaster mitigation and disaster education in schools. According to the letter, schools should schedule disaster lessons into the classroom curriculum. However, only some have implemented such as Elementary Muhammadiyah School, which have included materials related to disaster education as stated by a participant from elementary Muhammadiyah School:

".....In our school, adopting and implementing regulations from the Ministry of Education and Culture regarding the implementation of the Disaster Safe Education Unit Program. In 2011, our principal issued a school regulation to have a special subject on Environmental Education. Disaster mitigation is included as a learning topic in this course...."

Furthermore, it is the lack of standardized disaster guidelines and curricula. Providing disaster education in the formal sector should be one of the main priorities. However, the Ministry of Education's curriculum regulations still lack specific and detailed guidelines for school students at all levels from elementary to high school. As a result, schools do not set competency standards for school students after receiving disaster education subjects. This is supported by participant statements from Public high School:

“.....we don't have such standardized curriculum or competence to be achieved by our students in terms of disaster education....” Another study participant from a public high school confirmed the same thing....”

The core of disaster mitigation education consists of recognizing the causes of disasters, actions to reduce the impact of disasters, actions that need to be taken before and during a disaster and things that must be done after a disaster occurs. The content of disaster mitigation education delivered by BPBD is not as detailed as expected; this is reinforced by participant statements from BPBD:

“.... We teach people how to evacuate themselves.....”

However, a different statement made by a participant (IRC):

“...We have a support group in each school called the Youth Red Cross, we provide them with guidelines and materials on survival and disaster evacuation”

In contrast to public schools in Banyumas Regency which have not included disaster education in the core curriculum schedule, as stated by participants from high school lecture:

“...For policies or regulations from the school department, or from above levels to include disaster in the curriculum, we don't think there is any, ma'am”.

At the university level disaster mitigation and education is a compulsory subject in the department of health, this is in accordance with the statement of the participants from nursing lecture:

“....Disaster management courses are compulsory subjects and exist in the core curriculum, for regulations based on the Ministry of Health, Professional Nurses Association,”

A similar statement from a geography lecturer that “....disasters education is an eminence in geography education...”

However, in the non-health department, not all of them have applied disaster mitigation courses, such as the statement from the Engineering lecturer which states:

“....Not all Engineering Study Programs implement disaster mitigation....only Civil Engineering study programs....”

Schools that do not include disaster education subjects as compulsory subjects are not subject to any sanctions and schools tend to prioritize more on academic learning curriculum rather than non-academic activities such as disaster education. This is corroborated by the participant's statement from teacher from middle schools reported that:

“....“We have so many academic related activities and disaster education as well as training is not one of

our priorities at the moment. Furthermore we don't have a specific regulation from the school principal to implement the policy from the Ministry of Education.....”

One study participant, a coach of Youth Red Cross in middle school stated that:

“....the school has goals priority as well as extra curricula program priority which mostly academic related, for instance unfortunately disaster learning education, including its preparedness activities for the school, is not included as one school's priority or curriculum...”

The other middle school teacher reported the same thing:

“....Because schools have too many activities, it seems like disaster education is not the focus at this time. One more thing is that schools often change school principals. The new principal may replace the policy of the old principal.....”

The teacher from Muhammadiyah elementary school stated that:

“....We have some reasons to put disaster education as one of our school priorities: Ministry of Education and Culture's regulations, and the location of the schools which are prone to disaster risks, that is located in the slope of a mountain, and we are also situated near sea....”

At the university level, and priority disaster mitigation in the Department of Health, Geography and Civil Engineering, this is in accordance with the participant's statement from lecturer of nursing:

“....the competence of nurses against disasters is based on associations and International council of Nursing...so it is a priority...”

“....disaster competence is an advantage in geography education, namely Geospatial competence” (Geography lecturer participant)

“...In the Civil Engineering department, there are disaster mitigation competencies that must be achieved ...” (Engineering Lecturer participants)

Lack of people's awareness for disaster education

Although there has been a circular letter from the minister of education regarding the preparation of disaster preparedness schools or teaching on disaster mitigation, not all schools prioritize this. This is reinforced by the statements of 2 participants from Middle Private and High School:

“....Schools have many agendas and activities that are directly related to academics, so disaster mitigation lessons are not a priority.....”

The existence of a curriculum, classroom materials, and training on disaster mitigation in schools requires rules or policies issued by academic

administrators, for example, teachers, school principals, regional education offices, and associations. However, the disaster education curriculum in public schools has not been prioritized by school leaders (principals). This was confirmed by one participant:

"...every new principal or new school principal has a priority program, but disaster education has never been one of them" (state high school teacher)...."

Base on result, there are several ways to inform public as well as school students about disaster mitigation process. The participants of this study reported their ways of informing an education approach:

"...When a disaster is about to happen, BPBD informs public via Whatsapp group, website, text messaging, radio relay, call center, and walkie talkie. The department schedule regular teaching and simulation program once in a week to different public places. Moreover the hospital disaster management team reported that they provide education and training for their...."

In schools that have implemented disaster education or included disaster topics in the learning curriculum and subjects, the types of approaches taken include explaining material in class, sharing with disaster experts, laboratory practices, and field trips. A participant reports on disaster education activities:

".....we include an introduction to disaster in the Environmental subject by learning in class, sharing experiences and activities with officers from BPBD, Fire Department and PMI, and field trip programs...." said one participant (Muhammadiyah Elementary School teacher)

Furthermore, disaster education is only an additional activity and is not included in the core curriculum. This is reinforced by the participant's statement from state high school):

"....Disaster education is only given as an extra class teaching program and the policy from the Ministry of Education is only regarded as a government appeal....."

A similar statement was also conveyed by the principal of a private junior high school level that:

"....Disaster training and education activities are carried out routinely after the end of semester exams and are student affairs programs, but are not included in the curriculum, in collaboration with MDMC, PMI, and DAMKAR...."

Furthermore, the lack of education approach and equipment is related to the lack of educational approach equipment including curriculum, subjects, guides, media and implementation of theoretical, practical, and field trip learning in schools. The following is the participant's statement from IRC:

".....IRC has been active in making agreements with schools in Banyumas Regency to prepare Disaster Preparedness Schools, by carrying

out disaster preparedness practices on a regular basis. The initial exercise consisted of three guided exercises (disaster scenarios at school, discussion, and guidance of the school team with students on disaster mitigation, DRR and school evacuation during disasters and then the practice of the evacuation process during disaster case scenarios), but could not be done regularly once a year"

At the university level learning has been more developed in its learning practices according to the participant's statement:

"...we apply learning using student center learning models, online learning and practical learning, but our weakness is that we have not carried out comprehensive disaster simulations involving DAMKAR, IRC in real form...."

Furthermore, other participants stated from lecture from geography:

"...Learning in the geography study program is through theoretical lectures, practicums and visits, but we don't do disaster simulations, we focus more on geospatial arrangements...."

"....In principle the learning is the same, but we don't do disaster mitigation simulations like the Health Department....we focus on spatial, environmental and structural management..."

Discussion

Lack of law enforcement in implementing disaster education

Barriers and challenges to disaster mitigation education in the formal sector or academic sector are the lack of regulations and policies for implementing disaster courses. The results showed that almost all study participants stated that there were no clear policies and guidelines in the implementation of disaster mitigation education in schools; even though they knew that there were rules. This is in line with the results of a research from Lee [19] who stated that the obstacles in disaster mitigation education are contextual issues, community understanding, and system level barriers including the availability of guidelines and accessibility. The results of the research by Kanyasan *et al.* [20] confirm that the obstacles in reducing disaster risk are unclear policies in national laws and regulations, unclear data, especially who is in charge, lack of evaluation and lack of cooperation between the public and private sector.

Based on the policy letter issued by the Ministry of Education No. 70a/SE/MPN/2010 [8], the obligation of disaster mitigation and disaster education must be carried out in schools. The Minister

of National Education appealed to all Governors, Regents and Mayors in Indonesia to carry out disaster management in schools through three things, namely: (1) Empowering the institutional role and capacity of the school community, (2) integrating DRR into the Curriculum of Formal Education Units, both intra- and extra-curricular, (3) building partnerships and networks between parties to support the implementation of DRR in schools. Even the Regulation of the Minister of Education and Culture of Indonesia No. 33 of 2019 concerning the implementation of the disaster-safe education unit program is very detailed regarding the implementation of disaster education [21]. Lack of socialization and understanding can become obstacles to the implementation of disaster mitigation activities, which we know that disaster mitigation education is needed to be carried out from the basic education level.

The Ministry of National Education and the Ministry of Education and Culture have issued clear regulations and guidelines, but there is no detailed curriculum yet. Indonesia's autonomous education system allows each school to creatively develop their own DRR curriculum taking into account the challenges of local specific natural disasters. However, in reality, most schools lack the capacity of human, financial, and technical resources to create their own disaster curriculum [22]. Materials related to efforts to prevent and manage the impact of disasters in intra-curricular, co-curricular, and extra-curricular activities, and even carry out learning related to materials for preventing and overcoming the impact of disasters that are integrated in intra-curricular activities [21]. This is what causes school confusion in its application. Based on the results of the study, it is known that only UMP elementary school which has clear rules for disaster subjects through environmental education subject. It is different from the secondary and high school levels which vary in the implementation of disaster mitigation education in extracurricular activities. These schools do not include disaster education in their curriculum.

This is in accordance with the research of Kastolani and Mainaki [4], disaster mitigation education needs to be introduced at the school level in Indonesia. As one of the efforts to prepare the Indonesian people for disaster preparedness. Disaster mitigation education must be included in the education curriculum, especially in subjects that are related to it. The previous research has stated that the integration of the disaster preparedness education in curriculum in schools is still not optimal, and there is no integrated program with the curriculum. The schools still require a complete and specific curriculum concept [23].

The results of this study show that disaster mitigation activities are only implemented as extracurricular activities, this indicates that disaster mitigation education has not become a priority in schools. The school is of the opinion that there are many academic-related school activities so that

academic activities are more of a priority. In addition to that, schools do not have the resources, guidelines, and technical implementation of disaster education in the curriculum. This is in line with the study of Kagawa and Selbi [22], which states that, in fact, most schools lack the capacity of human, financial, and technical resources in implementing disaster education.

This condition is contrary to the regulations of the Ministry of National Education and the Ministry of Education and Culture, that disaster-safe education must be implemented in schools [21]. Further stated by Desfandi [12] that through disaster education students are expected to be able to think and act quickly, precisely, and accurately in dealing with disasters. The disaster curriculum must accommodate local wisdom, as an effort to provide the right education to deal with disasters simultaneously, it is very important to implement disaster education in Indonesia [12], [24]. Disaster education at the university level has been determined to be a mandatory competency in health science disciplines, for example, for nursing science program; it is contained in the competence level target for its graduates. Moreover, Indonesian nurses Education Association also released a curriculum guideline in 2015 (AIPNI curriculum) in which disaster management also a part of the subject [25].

Lack of people's awareness for disaster education

The second barriers and challenges in building effective disaster education are lack of education awareness, education approach and equipment. The awareness of providing disaster education should come from the academic institution. The lack of awareness from academics/schools to implement disaster mitigation education activities is because this has not become a school priority and there is no monitoring or evaluation from the government, so a comprehensive school-based DRR program is needed [20]. As in Indonesia, there has been no widely publicized evaluation of disaster activities in schools. The results of Afisa's research [26], which evaluates the implementation of the Disaster Preparedness School Program (SSB) as a Disaster Mitigation Step in the city of Yogyakarta, shows that elementary schools do not yet have a program organizational structure, do not yet have specific regulations and curriculum related programs, some implement disaster mitigation in the classroom, some are simulated [26]. Most schools in Indonesia implement SSB as an external program outside the curriculum, so its implementation has not been effective. Schools do not feel important in implementing disaster mitigation and SSB plus there is no evaluation and punishment when schools do not carry out these activities [27].

The importance of disaster education is how school children can be directly involved in disaster management [10], [11], at the early stage through

formal education, namely, by preparing a curriculum and, based on concepts and implementation as well as the importance in structure and subject matter [12], [13]. Encouraging the awareness of disaster preparedness since an early age is important to instill the right techniques refer by the expert, as to maintain the basic safety from the risks of disasters in the minds of schoolchildren [10].

A good disaster education should be able to deliver the right and most effective disaster awareness to people and school children which could save them during the disaster event. It will be more effective if carried out continuously through school curriculum [11], [14]. Thus, fundamentally promoting disaster education since an early age is a step and initiative towards a community that constantly aware of disasters [15]. Not only delivering it since early age, the learning process, approach as well as equipment should support the education thus the students would accept it, understand it even enjoy learning disaster.

Disaster education is an essential link to build human morality to allow individuals to uphold environmental ethics as well as to willingly act and participate in finding fundamental answers to disaster management. Therefore, the government, the academic institution as well as other parties such as IRC is actually required to carry out its obligations concerning education in accordance with local conditions. The government has released a complete guidance book entitled Pendidikan Tangguh Bencana. The book consists of disaster education curriculum, preparing safe school before and after a disaster hits, including ways of conveying the education to the school children [1].

Conclusions

Educating disaster mitigation through formal education from the early stage is very significant. Substantial matters need to be well constructed are guidelines for implementing disaster education in schools as well as curriculum based on the concepts and implementation, correct construct, and subject matter. Encouraging the awareness of disaster preparedness since an early age is important to instill the right techniques. Moreover, this study also has some strengths and weaknesses. This study invites all stakeholders involved in the implementation of the mitigation process and disaster mitigation education. Various participants were able to give adequate insights in to the themes and topics of this study. However, the authors might still be able to involve more participants from high public and private schools as well as from regional ministry of education office. Subsequently, rules and regulations which have been released could be explored in more details.

Ethic approval and consent to participate

This study had attained an ethical clearance letter from Universitas Muhammadiyah Purwokerto (no. of EC: KEPK/UMP/15/IX/2019) before the data collection process. All participants received oral and written information about the study background, aims, and data collection process prior the FGD. The participants then signed an informed consent. Selected participants were further informed to follow an in-depth interview after the group discussion.

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