The readiness of special school teachers in Padang City in the implementation of disaster risk reduction learning for students with hearing impairments

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Abstract. This study intends to describe and analyze the readiness of teachers in the implementation of learning disaster risk reduction for students with hearing impairments in Padang city, which consists of several aspects, including: characteristics, planning, implementation, and assessment of learning process outcomes. This type of research is quantitative descriptive research, with a sample of twenty-four teachers who educate students hearing impairments, and the instruments used in this study is a Likert scale questionnaire. The results showed that teachers are less prepared in the implementation of learning disaster risk reduction for students with hearing loss, especially on aspects of characteristics learning and plan to learn. Seen from a low percentage, but on aspects of implementation learning and assessment of teacher learning process, outcomes are ready in implementing learning disaster risk reduction for students with hearing impairments.

1. Introduction

Approximately sixty-six million students are affected each year such as floods, drought, earthquakes, and other forms of disasters[1], and an estimated seven million students with special needs such as[2]. When disaster strikes students are the most vulnerable groups affected, and among students, there are students with special needs who are twice more vulnerable to disaster impact[3]. Disaster risk reduction (DRR) education for students from an early age has various positive sides including students with special needs, student involvement in disaster management contributes positively to rescue, recovery and disaster rehabilitation[4].

National disaster management authority data states that 83% of Indonesia disaster-prone areas and 80% of them are ecological disasters. Meanwhile, in the last six years the meteorology, climatology and geophysics agency recorded major earthquake activities in Indonesia, namely the 9.1 magnitude earthquake in Aceh accompanied by the 2004 Tsunami, 8.7 magnitude earthquake in Nias in 2005, 6.3 magnitude earthquake in Yogyakarta in 2006, 7.4 SR earthquake in Tasikmalaya in 2009, 7.6 SR earthquake in Padang in 2009, and 7.2 SR earthquake accompanied by Tsunami in Mentawai [5]. Disaster risk reduction education for students with special needs since early has a positive side in the
implementation, need to approach and consider the perspective and capacity students with special needs in the face of disaster.

Involvement students in disaster risk reduction education planning are still lacking, while the disaster is unavoidable, the risks faced by students can be prevented or reduced[6]. Disaster risk reduction activities as mandated by Law Number. 24 of 2007 on disaster management must be integrated into development programs[7], are included in the education sector in line with the Hyogo framework for action drafted by the un priority for action 3: Use knowledge, innovation, and education to build a culture of safety and resilience at all levels[8].

Disaster risk reduction education can be started since childhood because according to Piaget, during this period is a concrete operational phase. This phase of students more easily recognize the facts and easy to imitate what they have learned, the ability of students to learn conceptually began to increase and have the ability to learn from the conditions, situations, and objects that are in the vicinity. Based on this, the education of disaster risk reduction on students is a very strategic step because the introduction of the concept from an early age gives more impact than adults or the elderly. Preparedness disaster risk reduction is developed by governments, organizations, and individuals[9]. School is part of the government, therefore the government through the school is obliged to create a safer environment for students with special needs to protect students during the disaster. The concept of school safety is numbers limited only to prevent the collapse of school buildings, but more broadly that is creating toughness disaster for the citizens of the school.

The student is the next generation in the future, this safety lesson is useful in developing a community that is responsive to disaster risk in the long run therefore, disaster risk reduction education is very important to teach students in school. Consortium Indonesia disaster education (2011) that the school is the base for community students. They are the parties that must be protected and simultaneously need to increase the knowledge of his disaster. School is an effective vehicle in providing information, knowledge, and skills to the nearest community. Based on data from the west Sumatra education office there are 145 special schools in West Sumatra with a total of 6,023 students and in Padang city there are 38 special schools with number of students as many as 1,656, out of the 38 special schools 21 schools are in the danger zone Tsunami with the number of students as many as 926 people. Students with special needs are among the most vulnerable groups in the event of a disaster including students with hearing impairments. Students with hearing impediments find it difficult to obtain information when a disaster occurs, because of the limited information that students with hearing impairments find it difficult to safeguard and even self-sustain themselves so that information on the procedure or rescue plan for the students of the auditory obstacles is needed so that they need the help of those around them for example teachers, friends, school staff and the community. Based on the background right, researchers felt the need to examine the readiness teachers in the implementation of disaster risk reduction study for students in the hope of improving preparedness students with hearing obstacles in the face of disaster.

2. Research methods
This research is descriptive research with a quantitative approach that aims to reveal something as it is. Research descriptive that intends to hold inspection and certainly measurements of certain symptoms[10]. The population is the whole of the research subject[11]. population according to Sugiyono is a generalization consisting of objects/subjects that have certain qualities and characteristics set by the researcher to be studied and then drawn a conclusion[12]. Can be inferred population are individuals who have the same nature although the same percentage of similarities, or in other words all individuals who will serve as research objects. The population of this study were all teachers who taught students with hearing impediments in the special school in Padang City and the school was in the Tsunami hazard zone.
Arikunto argues that the sample is partly or representative of the population studied [11]. While according to Sugiyo number sample is part of the number and characteristics possessed by the population [12]. In this study, the object of the inquiry is the teacher who teaches students with special school hearing obstacles in Padang City and the school is in the Tsunami danger zone. The sample in this study is twenty-four teachers with the reason because the population under hundred according to the opinion of Arikunto that if the population is less than hundred, then the sample is taken from the entire population [11].

An instrument in this research is a questionnaire. Questionnaires are used because they are better able to capture individuals, able to disclose more information in less time, at a lower cost. The questionnaire is used to obtain information and information about the implementation of disaster risk reduction learning for students with hearing impediments in Padang lifting using the Likert scale with alternative answers very ready, ready, less ready and numbers ready. Data collection technique the user is to administer the questionnaire to teachers who teach students with hearing impediments asked to fill the questionnaire. After the data collected, then the data is processed by the formula percentage with the formula as follows:

$$P = \left( \frac{F}{N} \right) \times 100\% \quad (1)$$

Information:
- \(P\) : Percentage
- \(F\) : The frequency of each answer that has become the choice of respondent
- \(N\) : Number of respondents

3. Results and discussion
The analysis of research data is aimed to see the implementation of disaster risk reduction learning curriculum which consists of several aspects: 1. Characteristic of learning lesson 2. Learning planning 3. Lesson implementation and 4. Assessment of learning process result. Objectives to be achieved in environmental education include aspects of knowledge, attitude, concern, skills, and participation [13].

International working meeting on environmental education in school curriculum stated that the learning process is done must reorganize values, clarify concepts to nurture skills and attitudes needed to understand the relationship between human, cultural and physical environment. Environmental education should also be followed by the practice of decision making and the formulation of behavior which is based on existing environmental issues [14].

With thus, the learning process of environmental education undertaken in addition to broadening cognitive insight should also touch the realm beliefs, attitudes, values, and behaviors. Tillar emphasized things similarly, the essence of education is the process of growth learners are socialized existence entrenched, in order life of dimension local, national, and global [15].

3.1. Characteristics learning
a) Planning learning characteristics (Knowledge, skills, and cap) in extraordinary schools based on disaster risk reduction lessons. b) Developing competence areas of knowledge, skills, and attitudes. c) Develop competencies developed through compulsory subjects, electives, and vocations.
Based on the results of data analysis can be concluded that the characteristics of learning belong to the category less ready. Learning planning becomes the main ingredient in learning and the most important tool for teachers is the learning implementation plan. Learning planning is included in the competencies which must be owned by teachers that is pedagogic competence, according to Istarani competence in pedagogic field number all teachers understand about teaching purpose, formulate the objectives of teaching, specifically select and determine the method of teaching in accordance with the goal to be achieved, understand the lesson materials as possible with using various sources, choosing, determining and using props, making tests and using them, and knowledge of other evaluation tools [16].

Competence is the knowledge, skills, the basic values reflected in the habit of thinking and acting. The competencies in question are the pedagogic competencies that teachers must possess, the pedagogic competence is the science that addresses issues or issues in education and educational activities [17]. Educational activities in question are to plan the learning and compile learning to be implemented. The process of preparing the activities systematically will be done to achieve the goal.

According to government regulation number 19 of 2005 article 20, it reads that the planning of learning process includes syllabus and learning implementation plan which contains at least the purpose of learning, materials, method, resources and result in assessment and learning[18]. Implementation of planning activities in the learning process is an attempt to determine the various activities to be conducted in the classroom in relation to efforts to achieve the objectives of the learning process that has been established in the implementation plan of learning. Constitution 24 of 2007 on disaster mitigation article 35 states that organizing disaster management in situations of disaster intended in Article 34 sub-paragraph a is disaster handling or counseling shall be conducted at all levels of society, in this case including the students with special needs [7].

3.2. Learning design

a) Develop a syllabus based on disaster risk reduction learning. b) Develop a syllabus according to the conditions and needs of learners with special needs. c) Develop lesson plans based on the lesson plan on disaster risk reduction. d) Aligning the principles of preparation of lesson-based learning lesson plans for risk reduction based on the characteristics and circumstances of learners.

Figures 1. Characteristics of learning disaster risk reduction
Based on the results of data analysis can be concluded learning design classified into the category less ready. Planning learning is a must do because learning is an activity to formulate goals to be achieved by a learning activity, how to assess the achievement of the goal, the material to be conveyed, how to deliver, and the necessary tools or media. Learning planning is an activity of projecting action to be implemented in a learning that is by coordinate to arrange and respond learning component so that activity direction (objective), activity contents (material), how to deliver activity (method and technique), and how to measure it (evaluation) become clear and systematic[19].

The lesson plan needs to be well developed and using a system approach means that the development of the lesson plan is influenced by the underlying theoretical and the steps taken in the manufacturing process. The learning process is viewed as a system because it has a number of components that interact and interrelate, have their respective functions to achieve learning objectives and establish the competence of learners.

The lesson plan should also be developed based on the students' knowledge because the quality plan runs the learning process much depends on how the design is made, whether it is scientific, intuitive. Teachers need to have knowledge of learning and learning theories and have the ability to make a good and effective learning plan. Furthermore, Plan of Implementation of learning should be developed to facilitate learners learn and form their own competence. Although the learning process is done in a classical way, the essence of learning is individual. Therefore, in developing a learning plan it is necessary to consider the characteristics of learners, in addition to other elements such as basic competencies, standard materials, and strategies used to shape the competence of learners. A teacher must have a concrete form of a learning plan in the form of learning implementation plan and syllabus. The learning and syllabus implementation plan contain at least the purpose of learning, teaching materials, teaching methods, learning resources, and assessment of student learning outcomes[19]

The syllabus is a lesson plan in a subject group that includes competency stages, basic competencies, subject matter, learning activities, indicators, assessment, time allocation, and resources, materials and learning tools[20]. The syllabus is an elaboration of competency standards and basic competence into the subject matter of learning, learning activities, and indicators of achievement of competence for assessment[21]. The preparation of the syllabus takes into account the allocation of time provided per semester, per year, and the allocation of time of other subjects which group besides pay attention to it the teacher should also pay attention to the diversity of the students because the learning for the children with special needs should pay attention to the characteristics that refer to the result of assessment conducted by the expert.

Integrating education learning materials DRR into subjects can be conducted on subjects in the curriculum structure (contents) which must be implemented in schools or additional subjects as basic subjects. Learning materials are materials needed for the formation of knowledge, skills, and attitudes that must be mastered by students in order to meet the standards of competence and basic competencies
established. Education learning materials DRR is divided into three phases, namely before the disaster, when the disaster, and for a moment or after a disaster. The three-phase learning materials are organized based on the types of disasters that occur, such as earthquakes, tsunamis, floods, landslides, and fires.

3.3. Requirements for the implementation of the learning process
a) Allocate face-to-face time in the disaster risk reduction learning process. b) Implementing additional hours of study for 4-6 hours per week according to education level on disaster risk reduction. c) Use of students and achievement of disaster risk-based learning competencies. d) Use disaster risk reduction instruction books recommended or authorized by the education office. e) Create a fun school environment by harmonizing, facilities, environmental settings, appearance, and attitudes of teachers. f) Manage the classroom by creating a conducive environment of academic, comfortable, orderly, and optimistic culture.

Figures 3. Requirements for implementation of disaster risk reduction learning process

The result of data analysis can be concluded that the learning design belongs to a ready category. Ministerial of education and culture regulation number 22 the year 2016 on standard process of primary and secondary education in chapter V. Implementation of learning which consists of learning process implementation requirement consist of: allocation of learning face time clock, study group, textbook lesson, and classroom and laboratory management[22].

National education system article 38 paragraph (2) The city government through the education office makes teaching materials that will be used by teachers in the learning process. The government has allocated a budget for disaster prevention and disaster risk reduction program as stated in government work plan. The curriculum center as the institution responsible for developing curriculum models as a reference unit of education in curriculum development has succeeded in formulating a series of teaching modules and training modules for integrating disaster risk reduction into educational unit levels. In total, this module consists of 15 teaching modules and 3 training modules, but it is unfortunate that the government still neglects education for students with special needs in the absence of a learning guide or module for exceptional schools.

To realize a safe school needs to take several steps. The first school should form a committee consisting of various stakeholders, ie the community around the school, parents, teachers, principals school committee and students. By involving all parties it is expected that the committee can gain understanding and agreement on what needs to be done. Involving expertise in the community, such as national agency for disaster countermeasure is very important. Parental involvement is also crucial in order that issues of student concern can be heard and resolved. In addition, other stakeholders need to be involved in order to be heard how they experience in relation to creating a safe school against disasters.
3.4. Learning implementation
a) Conditioning the students psychologically and physically to be ready to implement the learning process of disaster risk reduction. b) Conducting preliminary activities with the coaching of familiarity and pretest (preliminary test). c) Implement core activities that include the presentation of competency information, discussion of standard materials, sharing of learning resources, a division of activity sheets, supervision, examination of activity sheets, and evaluating students’ incompetence. d) Plan core activities tailored to the competency areas of knowledge, skills, and attitudes. e) Conducting closing activities by assigning tasks and post-tests in the form of enrichment, direct practice/simulation for learners.

Figures 4. Implementation of disaster risk reduction learning

Learning design is classified into ready categories, learning is essentially an interaction between learners with their environment, resulting in behavior changes in a better direction. In such interactions many factors influence it, both internal factors that come from within the individual, as well as external factors coming from the environment, such as the use of instructional media as part of the learning resources. The main task of the teacher is to condition the environment in order to support learning.

The purpose of the opening lesson is the first, to draw the attention of learners is done by convincing learners that the material or learning experience to be done using for himself especially in disaster risk reduction, make fun interaction. Second, to develop motivation learners learn, done by building an intimate atmosphere so that learners feel close, cause curiosity, linking materials or learning experiences that will be done with the needs of learners. Third, provide references or signs about the learning that will be done, carried out by means of the objectives to be achieved and the tasks that must be done in relation to the achievement of the goal[23].

The core activities are discussed on themes and subthemes through various learning activities using multimethods and media so that learners get a meaningful learning experience. In addition to multimethods and media, teachers begin to present learning themes to learners using a variety of strategies or methods. In fact, in the presentation of learning themes, teachers can also perform small, individual, or classical groups[24]. Closing activities can be interpreted as an activity undertaken by the teacher to end the lesson with the intention of providing a comprehensive picture of what has been learned learners and their relationship with previous experience, knowing the success rate of learners and the success of teachers in the implementation of the learning process[23].

3.5. Assessment of learning process outcomes.
a) Assess preparedness, process, and learning outcomes based on disaster risk reduction competencies. b) Implementing a benchmark reference assessment on disaster risk reduction learning. c) Using a portfolio-based assessment as a measure of attitude/behavior and skills. d) Include the core competencies and competency standards of graduates as assessment.
Figures 5. Assessment of the results of the disaster risk reduction learning process

Based on the results of data analysis in the table above, it can be concluded that the design of learning belongs to a ready category. Evaluation is one of the main activities that must be done by a teacher in learning activities. By assessment, the teacher will know the development of learning outcomes, intelligence, special talents, interests, social relationships, attitudes and personality of students or learners. Assessment of learning outcomes is basically questioned, how the teacher can know the learning outcomes that have been done and the level of achievement of the competencies of learning activities that have been implemented that can be expressed with value.

Evaluation of learning is a process to determine the final value of a lesson learned in the classroom, through the measurement and assessment of learning. The evaluation includes no of techniques that can not be ignored by a teacher. Evaluation is not a mere set of techniques, but evaluation is an ongoing process that underlies overall good learning activities. Evaluation of learning aims to determine the extent to which the efficiency of learning processes implemented and the effectiveness of learning objectives that have been determined. In the framework of learning activities, evaluation can be defined as a systematic process in determining the level of achievement of learning objectives that have been set. Evaluation is an action or a process to determine the value of something The assessment is done in an integrated manner either formally or informally, in the form of written test, practice, student work collection, product and assignment[25].

Readiness of teachers in evaluating the learning that is: 1) Determine the evaluation of learning with the written method 2) Determine the evaluation of learning by oral method 3) Determine the evaluation of learning by the method of observation 4) Assessment of attitudes, skills, and observations 5) Processing the results of evaluation learning.

4. Conclusion
Disaster risk reduction education is very important to be taught from an early age to students, during this period is a concrete operational phase. Students are easier to recognize the facts and easily imitate what they have learned, the ability of students to learn conceptually begin to increase and have the ability to learn from the conditions, situations, and objects that are in the vicinity.

Students with hearing impediments find it difficult to obtain information when a disaster occurs, because of the limited information that students with hearing impairments find it difficult to safeguard and even self-sustain themselves so that information on the procedure or rescue plan for the students of the auditory obstacles is needed so that they need the help of those around them for example teachers, friends, school staff and the community for that teachers need to provide concrete lessons to students with hearing impairments in the field there are many teachers who have difficulty in designing disaster risk reduction learning not only that the teacher difficulties in accessing learning resources is also a constraint. The government through the education office should train teachers how to create, design disaster risk reduction lessons and provide learning resources related to disaster risk reduction materials.
References

[1] Nikku, BR 2012. *Children's rights in disasters: Concerns for social work*: Insights from South Asia and possible lessons for Africa. International *Social Work* 56 (1): 51-66

[2] Ronoh S, Gaillard JC, Marlowe J 2015. *Children with Disabilities and Disaster Preparedness*: A Case Study of Christchurch. Journal Kötuitui: New Zealand Journal of Social Sciences, 2, 91-102

[3] Good, GA 2015. *Emergency Plans in Schools Individualized Disaster Planning for Students with Impaired Vision*. Journal of the South Pacific Educators in Vision Impairment, Volume 8, No 1, 2015, p 17

[4] Lopez Y, Hayden J, Cologon K & Hadley F 2012. *Child participation and disaster risk reduction*. International Journal of Early Years Education, vol 20, no. 3, pp. 300-308. DOI: 10.1080 / 09669760.2012.716712

[5] Syahputra & Munadi 2011. Knowledge Management for Disaster Risk Reduction (*Concept and Implementation at Tsunami and Disaster Mitigation Research Center - Unsyiah*), National *Seminar on Informatics* (semnasIF 2011) ISSN: 1979-2328 115-123

[6] Ronoh S, Gaillard JC, Marlowe J 2017. *Children with Disabilities in Disability-Inclusive Disaster Risk Reduction*: Focussing on School Settings. Policy Futures in Education,15, (3) 380-388

[7] Law of the Republic of Indonesia. No.24 of 2007. *Disaster Management*. Jakarta

[8] UNICEF (United Nations Children's Fund) 2007. *Promoting the Rights of Children with Disabilities. Florence, Italy, UNICEF Innocenti Research Center*. http://www.un.org/esa/socdev/unyin/documents/children_disability_rights.pdf accessed on March 27, 2018

[9] UNISDR 2009. *(United Nations International Strategy for Disaster Reduction)*UNISDR Terminology

[10] Fathoni A 2006. *Method Research and Technique Arrangement Thesis*. Rineka Copywriting. Jakarta

[11] Arikunto, S. 2013. *Research Procedure: A Practice Approach*. Jakarta: Rineka Cipta

[12] Sugiyono. 2013. *Method of Research Education Approach Quantitative, Qualitative, and R & D*. Bandung: Alfabeta

[13] Gyallay, P 2004. *PAP-ETAP Reference Guide Book*, Chapter 13. (http://www.un.org.kh / fae / pdf / section4 / chapterxxx3 / 33.pdf)

[14] Schmieder, AA 1977. *The Nature and Philosophy of Environmental Education: Goal and Objectives*. Trends in Environmental Education. (UNES-CO)

[15] Tillar, HAR 2000. *Education, Culture, and Society Madani Indonesia*. Bandung: PT Remaja Rosdakarya

[16] Istarani . 2015. *Encyclopedia education Volume 1*. Medan: Media Persada

[17] Depdiknas. 2004. *Guide Arrangement Unit Level Curriculum Education Level Education Basic and Medium, Standard Content, Standard Graduation*. Depdiknas, Jakarta

[18] Rules Government No 19 Year 2005 About Standard National Education

[19] Sudjana, N. 2006. *Assessment of Teaching and Learning Process Outcomes*. Bandung: PT Remaja Rosdakarya

[20] Mulyasa. 2010. *Become a Professional Teacher (Creating Creative and Joyful Learning)*. Bandung Rosda. The ninth print

[21] BSNP. 2007. *Education Unit Level Curriculum*. Jakarta: BSNP

[22] Kemendikbud. 2016. *Permendikbud No 22 Year 2016 About Standard Process Education And Intermediate*. Jakarta: Kemendikbud

[23] Majid, A. 2014. *Learning Thematic Integrated*. Bandung: Rosdakarya
[24] Hajar, I. 2013. *Guide Complete Curriculum Thematic For SD / MI*. Jogjakarta: Diva Pres  
[25] Kunandar. 2008. *Step Easy Research Action Class As Development Profession Master*. Jakarta: Raja Grafindo Persada