

## **CHILDREN SELF-REGULATION: A MODEL IN FLASH FLOOD DISASTER RISK AT SITUBONDO EAST JAVA INDONESIA**

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### **Abstract**

The article was based on the case study that was conducted in Kabupaten Situbondo, East Java. The purpose of the study was to explore how the children who live in a region with flash flood hazard develop their adaptation competencies with disaster in harmony before and after disaster occurred. Early children usually are vulnerable in disaster hazard because of their lack of physical, knowledge and understanding on that matter. Living in an area with disaster hazard causes them develop some ways to regulate themselves from disaster consequences. This phenomenon is called self-regulation in which self-awareness and the maturation of socioemotional developed naturally. Using qualitative analysis, the result describes the categories from three children as information subject.

**Keywords:** *Disaster hazard, Flash flood, self-awareness, self-regulation*

### **I. Introduction**

East Java is one of disaster-prone areas in Indonesia. Many kinds of disaster happened in several districts and cities in East Java such as volcanic eruptions, floods, landslides, fires, earthquakes, moreover tsunamis. Although most of these disasters are caused by natural phenomenon, but it can also cause by inappropriate human behavior toward environment and nature. The threat of disasters like floods or fires today are not only due to natural phenomenon or providence of God, but also triggered by unawareness of humans interact with nature.

According to BNPB (2009), the threats of disaster in East Java are potentially happen annually, like a flood. Although many reservoirs have been built in Central Java to East Java, there are some regions that annually flooded; such as Ngawi, Madiun, Bojonegoro, Tuban, Lamongan and Gresik. In Bojonegoro, for example, half of the districts are annually affected by annual flood. Another case of flash flood in East Java happened in Malang and Mojokerto that were caused by overflowing of Brantas creek, while in the most eastern part such as Probolinggo, Situbondo, and Jember are affected by flood as the consequence of deforestation of

surrounding areas in the 2000s. Situbondo, as the area near the beach and it has lower geographical position than Bondowoso, since 2002, the area that is affected by flood become wider. Another case of disasters are earthquakes that happened on the South coast of East Java, especially the South area of Banyuwangi. (Article of Unesa Community Service Institution, 2009)

Since tsunami happened in Aceh in 2004, Indonesia has created disaster preparedness program through the National Plan of Indonesian National Board for Disaster Management in 2010 to 2014. Disaster preparedness program was formulated based on the stages of the disaster. Mitigation phase is the preparation phase of the potential disaster that is possible to happen in certain area or community. Mitigation stage is the first stage in disaster management. This stage is constructing knowledge about disasters, types of disasters, and introducing disaster characteristics, as well as actions that need to know before disaster happens. The second stage is pre-disaster stage; this is the stage when early symptoms occur as a sign of possible disaster happen within time. The third stage is the stage during disaster. This stage is a critical stage of choosing the needs to move or out of the disaster area, the aims are the first secured place and evacuation preparations. The last stage is the post-disaster stage, that is the stage after disaster. This stage deals with reconstruction and rehabilitation of the area and community affected by disaster.

One of major goals to understand the concept of disaster is to minimize the losses that may occur during the disaster. The losses can be fatalities or materials. The fatalities are not always interpreted as residents or citizens who died when the disaster happens. Victims should also be understood as the citizen who suffered to a traumatic condition both psychologically and physically.

During the time, those who belong to victims are person or group in the productive age. This is based on an idea that children as one of the most vulnerable become victim, are still the responsibility of parents or next of kin. Though by the limitation of children, both the ability to think and act, then children are victims who deserves more attention when disaster happens as well as post-disaster.

Situbondo, especially some districts along the north coast and which located around Argopuro mountain are oftenly affected by flash flood since 2002.

In the last three years, the area that is affected by flash flood become wider. This is closely related to the geographical location of the affected areas that are mostly located around Argopuro mountain such as Bungatan district, Mlandingan, Suboh, and Besuki. The hills around Argopuro mountain were a lush forest before it was changed into production forest after reformation in 1998. Production forest is forest where many trees are planted and in certain age (usually 4 or 5 years) will be cut down. Therefore, the 'water absorbent' area in the past were a lush forest, at certain times become leafless. When in the rainy season the forest is barren or the tree is not strong enough, this is triggered flash flood happens.

Children live in the region that are affected by disaster should get attention especially on their social emotional development. Self-awareness as a child who live in the area which potentially threatened by disaster need to be introduced to children at early age, especially in condition when disaster happens. By limited skill of thinking, knowledge about disaster, as well as physical abilities, children become most vulnerable as the victims of disaster. For some children, disasters can be a traumatic experience; therefore, their attitude show the fear. However, for some others, disasters create their ability to manage the fear. These children may be get socialization about disaster symptoms from adults, whether parents or teachers where they studied. According to a research by Blaikie et.al (in Fothergill and Peak, p. 2) states that the attitude of receiving disasters (vulnerability) are the capacity / attitude of the person or group to anticipate, overcome, survive and recovery on post-disaster.

This study tries to map the model or categorization of self-regulation of early childhood, in this case is limited to children of 4-6 years old and has studied in early childhood education/ PAUD (Kindergarten or RA), in disaster-prone areas. Self-regulation is a form of capacity of child's abilities in knowledge, attitudes and skills show in child's behavior to overcome, survive, recover or anticipate disaster in their environment. Knowledge, attitudes and skills show in their behavior constructs self-awareness and emotional development of children at the stage of pre-disaster, during disaster and post-disaster.

Based on the background, the problems investigated in this study are as follows: a) How is the model of self-regulation that is developed by children? b)

How is the self-awareness that is constructed by children who suffered flash flood?  
c) How is the socioemotional skills of children who suffered flash flood?

In line with the problems, this study will categorize self-awareness and emotional development to anticipate, adapt and take an action in the stage of pre-disaster, during disaster and post-disaster on early childhood of 4-6 years old.

### ***Concepts of Disaster Risk***

In the Disaster Management Plan of 2010-2014 (2010), disaster defines as the event that threat and disturb the live of human which is caused by natural phenomenon, non-natural phenomenon, or even human factor that has impact of dead, environmental damage, loss of property objects, moreover psychological impact. Meanwhile, according to the International Strategy for Disaster Reduction (ISDR) disaster is (2011) a phenomenon, substance, human activity or a dangerous condition that can cause dead, injury or the other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. In short, a disaster is a dangerous event or condition that can threat human life, causing loss of property as well as social and economic services that can be caused by nature or human.

### ***The Self-Regulation Theory***

The concept of self-regulation, that firstly developed by Bandura (Zimmerman, 2000), is a self-directed process in which the learner changes his mental skill into the skill related to a job through it. Self-regulation strategies associated with the concept of time and other resources that focus on the goals to be achieved. The goals to be achieved in the process of self-regulation (regulation) is enriching the knowledge (cognitive), social attitudes and acting skills towards social welfare / emotional maturity. This goal is achieved from the meaningful learning experiences in interacting with environment, both social and physical. The purpose of self-regulation would emergence as the response to the conditions experienced (Boekaerts and Corno, 2005). Therefore, Gredler (2011) says that the process of self-regulation consists of informational cognitive structure of goals, result, behavior and cognitive process in understanding, evaluating, and regulating

individual behavior. Therefore, from learning experience achieved, someone can set the standard of behavior, constructs self-awareness and how to self-assess to deal with the same situation and condition.

### ***The Theory of Self-Awareness Development of Early Childhood***

Self-awareness of early childhood, according to Catron and Allen (1999), relates to a process to build the awareness and self-control toward environment as the development of self-identity related to positive images of health and sexual for himself. Self-awareness of children can be seen on the child's ability to perform activities such as, going to the toilet, washing the hands, helping to clean the table before lunch, putting on a jacket before leaving home (traveling) and many other activities that help adults' work. Besides, self-awareness is also associated with the development of responsibility for safety and health of himself.

The children were not easily got out of a dangerous situation. Children also sometimes naive, they sometimes do not have ability to evaluate the potential dangers that exist around them. The children are credulous; they are sometimes unable to prevent an adult to get out of the problem. In addition, an understanding of nutritional needs, the ability of physical control development through the variety of the function of body, and recognizing the choice of children about their improved health. Program policy for health needs such as immunization for children, food and snack nutrition planning, learning procedure for cleansing themselves in order to lead children to the healthy choice.

In particular, the development of self-awareness of children can be divided into the following indicators:

#### ***Expertise to Help Themselves***

The first part of self-awareness area includes children development of the variety of expertise in order to help themselves. The specific goal of development of this section are described as follows:

- a. Increasing children ability to wear and take off the clothes independently.
- b. Generating children to set their own needs for their activity and being calm and recognize their conscience to take a rest or sleep if it is necessary.

- c. Maintaining freedom in the case of service for a lot of food varieties.
- d. Helping children learning to set the pattern or time of when they have to go to the toilet.

### *Freedom*

The second part of this area is growing in freedom. A development of an important task for children are learning of freedom, including being part of the individual, the development of a sense of responsibility and environment control. The specific goal of the development of this section includes the following matters:

- a. Make children to take responsibility for playing by themselves, the self-purpose and so on.
- b. Helping children to learn to separate themselves from their families. (Hendrick, 1998)
- c. Helping students to make choice and decision about interaction with the environment.
- d. Make children to practice in terms of supervision over their environment.

### *Personal Health*

The third part of self-development area is personal health. Being an individual who receiving his sexual and self-identity. Children also need to learn about the habitat of health to develop improvement level of responsibility for their physical. The specific goal of the development of this section are as follows:

- a. Teaching children to identify parts of the body and make it a positive body image. (Hendrick, 1998)
- b. Helping children to understand the difference of identity and being comfortable with sex and sexual identity.
- c. Increasing self-awareness toward the need for sanitation and learning about personal health.
- d. Make children to train their nutritional habits of food and the health of food.

### *Personal Security*

The fourth part of this self-awareness is personal security. Help children to develop awareness of security and ability to distinguish between the safe or unsafe situations as an assignment in teaching personal safety. The specific goal of the development of this section are as follows:

- a. Increasing children's awareness on security and insecurity when interact with adults.
- b. Teaching children to assess their right for personal and ownership.
- c. Teaching children to be aware of dangerous environment in the classroom and home. Children learn to such things as responsibility toward themselves to the unsupportive and unsafe environment and situation.

### ***Emotional Development of Early Childhood***

Erik Erikson (in Catron and Allen, 1999, Slavin, 1997), mentions several stages of emotional development of children as follows:

#### ***Trust vs. mistrust***

In the first year of his development, a child will experience development crisis that exist between trust and distrust. In this period, a baby learns to ask adults to meet their basic needs.

#### ***Autonomy vs. Doubt***

During the second year, the development crisis will be experienced by a child in the atmosphere of independence or doubt and shame. Children in this age struggle against prudence and their parts of body begin to function. Children who succeed through this period will take him towards independence and a sense of security. While for children who are not succeed, they will feel insecure and doubtful about their ability and feel that they are a small creature and useless.

#### ***Initiative vs. Guilt***

High initiative or always feeling guilty is on the third stage. Children in this period have excess energy and high curiosity and become very concerned about themselves. Children aged three years old were tend to move, explore, plan

something, and agile to always be active. However, children who fail through this would feel doubtful to interact with others.

### *Industry vs. Inferiority*

The fourth of eight stages that have been mentioned is the last stage of early childhood period. In this stage, children were at the age of 4 to 5 years old. Development crisis in this period is between productivity and inferiority. Children will explore their complex interaction and always try their abilities. Children who cannot pass this will feel inadequate knowledge and useless. Otherwise, to those who succeed, they will be proud of themselves and feel successful.

Socio-emotional development of children is closely related to the development of the child's ability to empathize to the needs or circumstances of others. The high value behavior in society is an expression of empathy and understanding toward others, this includes an understanding on the emotion and need of others and uses that understanding and information to respond and provide help. This becomes an important thing for children to interact with peers and others in their life.

The ability to control emotion faced by children from the age of 5 years can be described in following indicators (Catron and Allen, 1999):

- a. Distinguish yourself as a separate person.
- b. Forming a positive attitude and believe in objects and adults.
- c. Establish an affectional relationship with others.
- d. Develop freely creative individual.
- e. Take the initiative to explore playing, learning, and growing.
- f. Involved in changes and pressure.

### ***Goal and Significances of Study***

The goal of this study is mapping self-regulation models of early childhood in pre-disaster, during disaster and post-disaster according to the fact that is experienced by the subjects in the study.

It is expected that this study will obtain some benefits as follows:



- a. Model of map of self-regulation of children, especially children who experience a disaster.
- b. This would be beneficial for science development of Early Childhood Education.
- c. This could be the foundation for further research and policy.

## **II. Method**

This study is a qualitative study which limits the scope of the focus of research on the case in a selected place in accordance with the background and the data that the researcher wants to explore as the actual conditions related to the characteristics of each research subjects. This study is an exploratory study focusing on the case of children who experience flash floods.

This research was conducted in Sumber Pinang Mlandingan village in Situbondo district. The subjects of this study are three children ages 6 to 6.5 years who learn in Raudhatul Athfal Mabadius Shaleh school. By using a construct validity, internal validity (focusing on the variables of self-awareness and socio-emotional development theoretically) and external validity by focusing on the input from early childhood education experts and also disaster experts, it is expected a reliability of research as the basis for the wider development of early childhood education.

This study used a strategy based on the development of a framework to organize a case. The subchapter in the report will be developed based on the findings of the case in the field by using pattern matching logic technique, which is based on the pattern relies on internal validity.

## **III. Result and Discussion**

In this research, the researcher found three subjects with different characteristics as children living in the areas that affected by disaster. They are Inay, Ilham, and Ifa. Those differences raise the finding categories that will be the basis for the discussions to formulate self-regulation of children in disaster areas.

### *Inay (6 years)*

Inay is the student of Mabadius Shaleh Sumber Pinang Mlandingan Situbondo kindergarten class B. Inay is not really active, she goes to school with her mother and was escorted until back home. According to her mother, although the flood is not coming every year, but the village where they lived quite often flooded. The location of their residence is near the irrigation channel which also become channel-breaking floods in their village. Though it is not too long, but the stagnant water is not change Inay's desire to play outside during stagnant water. When she asked about the water level during a flood, Inay put her hands above her head, "This high".

Inay's residence is one of the villages which affected quite badly in Sumber Pinang village. The level of flood shown by her proves the severity of the impact. However, Inay likes doing activity during the flood. School holidays and could swim in stagnant water. In fact, with the condition that high puddle, the water receded within 2 to 3 days and during that time they usually had to endure for the void and shower.

The second child, Ilham (5.5 years) lived in the area that affected by floods but not as badly as Inay's. The water level is only as high as his ankle. So, it took about 2 days until the water recede. However, during that time Ilham does not play outdoor. He chose to play in his house with his brother. This is because Ilham often got sick when the weather is not good. Ilham dislike the flood because at that time he could not go shopping and have limited choice of dish to eat every day. Ilham is also afraid to float off if he is playing outdoors.

The third child is Ifa, 6 years old. Ifa is an orphan living with her grandmother from her father. Her mother works outside the city and has very limited access to meet Ifa. Ifa stays near Ilham, so the flood affected her village has similar characteristics with Ilham's. Ifa also do not like to going out when the water is stagnant, but she has different reason of it. She prefers to help her grandmother to sell in the shop. She said that this condition is the same as any other holiday. The condition to help her grandmother.

According to the cases above, it can be seen how the children who live in area affected by flood disaster. Based on three subjects, it is found that two children;

Ifa and Ilham are living in the area that slightly affected by flood. Therefore, only a child that is Inay who live in the area which severe enough affected by flood because the water level during the flood as high as the thigh of adults, or it is more than 60 centimeters. Inay is lucky enough because the water is not entering her house, even though from the information obtained says that some of her neighbour's house are flooded until the next day. Inay's house is close to the sluice of main river, not irrigation canals as Ilham's and Ifa's.

Learning in early childhood education where they studied, RA Mabadius Shaleh, has not extensively discuss about flash flood that almost every year threaten their residences. Flood is only discussed as a water hazard in the theme of Water, Air and Fire taught in semester 2. Thus, although the children aware that their school and almost all parts of their village have been affected by flood, but they do not realize the importance of knowing the danger of Flash flood disasters.

Three subjects as the main informants in this study were children who are over the age of 6 years, that according to Piaget's perspective children in this age have cognitive development movement from the stage of pre-operational to the concrete operational. Furthermore, the presence of volunteers from the Laboratory of Faculty of Social and Politic Science, Jember University provides a new knowledge for children about the dangers of flash flood. Actually, only Inay who thought that it was a pleasure moment when floods swamp her house. This is because the flood can be a place to swim without realizing the dangers of it. The other two friends, Ilham and Ifa are not allowed to play outside the house even though the level of water in their house is not as high as Inay's. Actually Ilham and Ifa do not playing outside their house during the flood is not because they aware about self-health. Ilham, for instance, he does not allow to play outside the house during the flood because he is easy to get sick. He easily got sick when playing in puddle of water. In other case, Ifa is an independent girl and sense of responsibility to help her grandmother.

In context of children who live in areas affected by flood disaster, they should have self-awareness with respect to the concept of disaster dikonstrakkan meaningful threat to the safety of a person. The safety related to the safety of lives and in relation to the concept of health. The problem of flash flood in affected areas

was not regarded as a threat. In Sumber Pinang village, amount of water is no longer in a speed of large overflow because it was split in several affected areas. Puddle is quickly subsided because the area is close to the North Sea (White Sand Beach) and there are still many open areas around. This condition makes the people around think the flood is just a routine event that is not really threat and have impact to the life and health. The impact of flood is just makes them feel uncomfortable for a while. This is referring to the Rah Wachid, the head of Mabadius Shaleh Boarding School as well as person in charge for early childhood education and school from Madrasah to Madrasah Aliyah, says that "the flood happens usually about February or March. The most severe area in Sumber Pinang was in the western part of boarding school. So, if flood happens, they refugees here. They are sleeping on the chairs. Goats also sleep there. That was usual for them because it already happened almost every year. That condition usually happened for two days. That is not so long".

The purpose of self-regulation would appear as a response to the conditions experienced by individuals. Regulation in children supported by children's self-awareness and socio-emotional development of them. Self-awareness related to the child's ability to implement the act skills related to their health and safety. In early childhood self-awareness can be trained or constructed by adults by providing knowledge of the importance of having these skills. In the condition of the three subjects in this study, the construction in the form of skills are not meant to cope when disaster happens.

Socio-emotional development of children is a form accompanying the child's ability to reconstruct the concept of knowledge into new concepts, act skills, or choose to do act.

As a form of response to the threat of disaster, children develops self-regulation by developing an action based on knowledge of new concepts which are then re-established by associating with other knowledge in order to be an act skill and ability to behave according to the expectation. This states by Piaget (Catron and Allen, 2013: 189), which emphasizes the role of children's cognitive. Children's feelings affect the attention and how that information is processed by feelings in order to assist and facilitate learning or to interfere the learning process. The way

children play though spontaneously or structured also help to shape children's emotional when they are under-pressure, giving children opportunity to express their emotions and add the ability to control their feelings and anxiety even in unsecure environment. This environment in which children can show characters, roles, describe the behavior, and courage to face their fear or anxiety. Based on this, the mapping of the children's self-regulation can be described in a matrix form as follows:

**Table 3.** Matrix of Children's Self-Regulation Model

<b>Indicators of Self-Regulation/ Children</b>	<b>Self-awareness</b>	<b>Socio-emotional Development</b>
<b>INAY</b>	Realizing to live in more severe area affected by floods than her friends', Inay likes to swim during the flood. Choose to place animal cages inside the house because livestock are valuable things for her family.	Can choose a kind of activity that can be exploited. Do not fear in facing the disaster threats. Accept unpleasant conditions (stagnant water is high enough, do not void and get shower).
<b>ILHAM</b>	Recognizing the physical limitations, therefore he chooses not to play outside the house during the flood. Choosing to have activity with siblings at home.	Physical limitations make he chooses to avoid the risk of having outdoor activity. Fear of the threat of floods. Do not like the condition during flood because he could not go shopping.
<b>IFA</b>	Receive threat of natural disasters as well as the limitation she received (orphan, do not live with her mother). Choosing activities to help her loved ones.	Accustomed to live with limited situations. Independent. Responsible to her immediate family.

#### **IV. Conclusion**

Living in the disaster affected area makes children develop their self-awareness and socio-emotional development according to the limitation of their understanding about the potential disaster. Model of Self-Regulation developed by

children based on their self-awareness and socio-emotional development can be summarized as follows:

- a. For children who experience more severe condition of disaster than the others, self-regulation in the form of a fun activity or the daily activities would be an option when a disaster happens, as what Inay, Ilham and Ifa did with different characteristics.
- b. Self-awareness developed by Inay, Ilham and Ifa based on the characteristics of the limitations of their condition. Limited environmental access (Inay), physical health (Ilham) and compassion (Ifa) have different impacts on developing children's self-awareness.
- c. Socio-emotional development of children seen on the ability of a child to choose an attitude or action performed during the floods.

The findings and results of the discussion in this study still needs more comprehensive assessment in order to map out the self-regulation of children who live in area affected by disaster.

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