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## Early Childhood Disaster Management Media Through Picture Story Books

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**ABSTRACT:** Indonesia is a country that has a high potential for natural disasters. Picture story book is a form of disaster management learning that can help children from an early age to prepare for a natural disaster. The aims of this study to develop story books as a disaster management learning media, to improve knowledge and skills of children and teacher about the understanding, principles, and actions of rescue when facing the natural disasters, to increase the teacher's learning quality in disaster management. Developmental research approach is used to execute the study. A total of 48 children aged 5-6 years have to carry out pre-test and post-test. Pre-test data shows that children's knowledge about disaster management with an average of 47.92% and its improved at post-test with 76,88%. Five theme of story books involves floods, landslides, earthquakes, tsunamis, lands and forest fires is the product. Dissemination of five story books are proper for children and improve their understanding of disaster management.

**Keywords:** *Early Childhood Education, Management Disaster, Storybooks*

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## 1 INTRODUCTION

Indonesia is a country that natural and non-natural disasters always comes. The disaster data presented during 2019 totaled 3,768. The types of disasters such as land and forest fires, drought, tornado, landslides and floods. Meanwhile, if it is compared with the data submitted, it is clear that the trend of disaster events is increasing every year.

The impact of this disaster will be faced by all citizens, especially early childhood. The differences that cause this according to (Hamele, Gist, & Kisson, 2019) are anatomy, psychosocial vulnerability and mental development causing children to become very weak when disaster strikes. The number of children who are victims of disasters is at 60% -70%. The same thing was also conveyed by (Efthymis et al., 2014) that children are a very fragile group when natural and non-natural disasters occur. Therefore, it can be illustrated that children need special attention from all parties in order to provide information and understanding of disaster management. For examples giving an opportunity to get to know the disasters that often occur around him, how to save themselves and know the recovery measures after a disaster. With this experience, it will help reduce the impact of losses from disaster events.

Children experience various vulnerabilities during and after natural disasters, not limited to threats to physical health, psychological impacts, and disruption to their education (Peek, 2008). As in the aftermath of the 2004 Indian Ocean tsunami, children in Indonesia are more likely to suffer from disease than adults (Guha-Sapir, Van Panhuis, & Lagoutte, 2007) and are less likely than adults to survive disaster (Frankenberg, Gillespie, Preston, Sikoki, & Thomas, 2011). Children are often more affected by disasters than adults (Kousky, 2016). It is estimated that around 175 million children per year are affected by natural disasters caused by climate change (Codreanu, Celenza, & Jacobs, 2014).

Proulx and Aboud (2019) evaluation is one step towards validating a new delivery approach for DRR education for children, given the need for research on the role of preschool in improving DRR education and the capacity of preschool-aged children to reduce environmental risks and respond to disasters. This evaluation found that the DRR-ECD intervention improved the overall quality of preschool, knowledge related to children's DRR, and some but not all areas of early learning. The findings add to the available evidence that preschoolers can effectively participate in DRR activities in their schools and communities in a way that is likely to minimize some disaster risk.

It has been shown that children's participation can have positive results in the rescue, relief and rehabilitation phases. Currently child participation is increasing attention as a component of disaster risk reduction (DRR). Lopez, Hayden, Cologon, and Hadley (2012) discusses children's participation and related literature reviews that illustrate effective DRR outcomes in diverse contexts. A myriad of factors such as gender, age, socioeconomic status, caste, religion, and geographical location play a role in socializing children in certain ways. This paper explores the role of children's participation in DRR plans and practices and identifies directions for developing an evidence base to support this potentially significant relationship. This shows that various innovations in education are expected to be able to foster a culture of safety when disaster strikes. In this case, early childhood should be the priority in disaster management programs. This priority for early childhood in dealing with disasters becomes very important because the stages of growth and development require the existence of learning media that help him to be able to clearly recognize the types of disasters, mitigation measures, how to save themselves and recovery after a disaster. Therefore, preparing for young children to face disasters becomes very important for the survival of a future generation.

In order to introduce disasters and how to deal with them, children need media to receive information and knowledge. Because disaster management is abstract for children to understand. By using of pictorial media, children will be easier to store information in their memories for a long period of time. It is similar to (Meng & Muñoz, 2016) story telling activities that use picture books being a media help children to be prepared in facing disasters and it will be a provision for how to protect themselves in the future. Therefore, the presence of an attractive learning media and in accordance with the child's growth and development needs becomes very important. It is

easier for children to get to know a series of concepts around them. According to (Sumantri, 2015) the successful of using learning media should be easy to understand, clear, interesting and convey the desired message to children. For example, the picture storybook media that deals with aspects of disaster management such as knowing various types of natural disasters, how to save themselves and recovery plans. Through these media, it is easier for teachers to convey information and knowledge about various disaster management actions.

But some kindergartens are lack of knowledge about various disaster management actions (Solfiah, Risma, & Kurnia, 2019). It is supported by teachers' mind who glance that disasters need not be introduced to children, limited information and learning media. Furthermore, teachers are also faced with the scarcity of books relating to disaster management. Even though it is available in bookstores, the price is quite expensive. It is contrary to the statement (Raj & Kasi, 2015) that teachers have an important role in preparing children to face natural and non-natural disasters. Teachers can design learning activities related to disaster management through the use of reading material, such as picture storybooks. As the result, the concept of disaster management is more easily recognized by early childhood.

Picture story book designed to introduce five titles such as floods, landslides, earthquakes, tsunamis and land and forest fires. Some of these disasters often occurs in Indonesia and there are lots of disadvantages especially for children. The plot of the story is designed having special characteristics, interesting images and disaster content; it is expected to support the children to more easily recognize the disaster management actions. In addition, the picture is designed more interesting, so that children are interested in reading the book both the teacher and their parents. Children can read the book with the teacher at school or even with parents at home. Kitagawa (2016) assumed that children get more knowledge about disaster management through reading activities in their free time or even daily activities.

Based on problems in the field and previous studies on disaster management for early childhood. The purpose of this research is to develop story books as a medium for learning disaster management, to improve the knowledge and skills of children and teachers about understanding, principles and rescue actions when facing natural disasters, to improve the quality of teacher learning in Disaster management.

## 2 THEORITICAL STUDY

Disasters are events that happen to everyone and every time. On this occasion, everyone is expected to have information and knowledge about disaster management actions in order to minimize risks and losses. According to (Undang-Undang No. 24 Tahun 2007 Tentang Penanggulangan Bencana, 2007) disaster is a series of events that affected people's lives that caused by natural factors or due to negligence of mankind. As a result, there are loss of lives, property and prolonged psychological problem. It defines that disaster is an adverse event for all levels of society. If the community is able to increase its resources, the losses from disasters will be reduced. As a component of the community, children need to be prepared to know disaster management.

### 2.1 *Early Childhood Management Disaster*

The United States estimates that around 1 billion children under the age of 15 live in countries affected by the earthquake (Masuda & Yamauchi, 2017). In addition, more than 175 million children each year face crises caused by climate change. Scientists and authorities have recognized that children depend on adults because of their physical, emotional and cognitive abilities for safety, as well as protection against emergencies and disasters. (Bosschaart, van der Schee, Kuiper, & Schoonenboom, 2016; Tuladhar, Yatabe, Bhandary, & Dahal, 2015). Over the past several decades, disaster education programs have been considered. for children as an innovative approach to disaster risk reduction. Many theories support the usefulness of this program. Education can improve risk perception among children (Faber et al., 2014).

Disasters and emergencies have increased worldwide. Advances in technology and its application in the realm of action are seen as the only effective ways to prevent disasters or reduce their impact. Torani, Majd, Maroufi, Dowlati, and Sheikh's, (2019) research aims to review the importance of education and the influence of various educational methods on disaster risk reduction and preparedness in vulnerable people. Disaster education aims to provide knowledge among individuals and groups to take action to reduce their vulnerability to disasters. Over the past decade, problems that train people to be prepared for disaster and respond well have been widely investigated. Based on the results, disaster education is a functional, operational, and cost-effective tool for risk management. Based on some evidence, it is important for vulnerable people to learn about disasters. There are various methods to educate vulnerable people, but there is no better method than others. People who are trained can better protect themselves and others. In this case, planning and designing a comprehensive education program is needed for people to deal with disasters including early childhood.

The series of disaster management according to (Abulnour, 2013) as shown in the picture below:

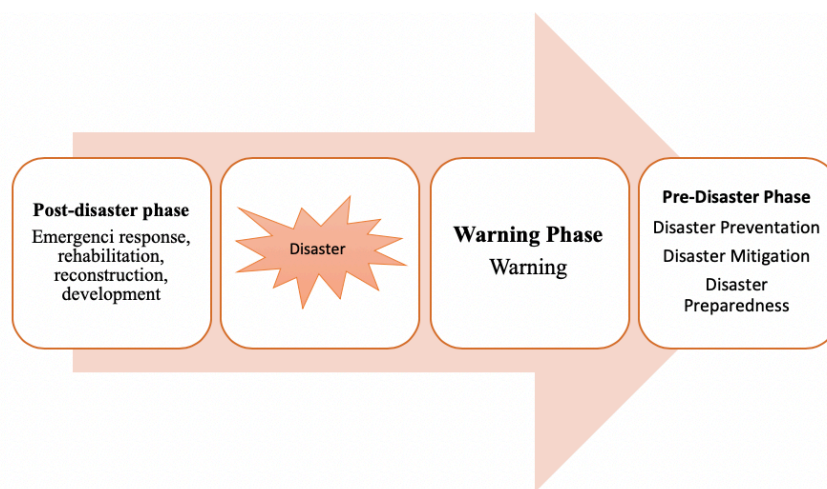


Figure 1. Disaster Management Cycle

Based on Figure 1, disaster management is a business that consists of various aspects and it is a longstanding process. Each aspect has an important role to reduce greater losses for all parties, especially for early childhood. The concept and implementation of disaster management help children to face the possibility of a disaster event. It is similar to education is the most significant way to reduce the impact of disaster events. On the other hand, schools, teachers, curriculum and learning media found in educational institutions contribute positively to the series of disaster management activities. Mutch (2014) emphasized that teachers and schools have a strategic role in preparing and reducing disaster risk. The teacher can introduce several disaster managements actions through integration in curriculum documents and daily learning activities. However, schools should provide various facilities that can foster knowledge such as the availability of picture books in the reading corner in the classroom and so on.

Resilience has become an important concept in the field of emergency and disaster management. Apart from the increasing use of resilience in the academic and public policy arena, the intellectual topography of this subject in the context of emergency and disaster management has not been much studied. Demiroz and Haase (2019) study provides an overview of the intellectual structure of resilience studies. Using bibliometric data collected from 20 emergency and disaster management journals, this article argues that the resdisciplinary nature of resilience research comes from its historical roots.

Environmental education, Education for Sustainable Development (ESD), and disaster prevention education cannot be ignored, because the community cannot be expected to develop. The ESD perspective is a concerted effort in various connected fields needed to achieve sustainable community development. In the field of learning, examples of this field include international understanding, the environment, world heritage, and local cultural assets, and, in recent years, biodiversity and climate change can be added and disaster prevention added to the list. In addition, safety education, including environmental education and disaster prevention education, presents important challenges for the future that must be carefully considered, including challenges from a human resource development perspective regarding teacher development and training (Fujioka & Sakakibara, 2018).

## 2.2 *Picture Story Book as Implementing Media*

Picture books are a special type of book, which combines verbal and visual communication codes. Picture books are the intermediate stage between comic books, which focus on visual elements, and picture books, which focus on text. In classic picture books the information carried by the text is usually also included in the illustrations (Batić, 2019).

Images in children's books may also have the role of illustrating text to reinforce what is explained by the text, not to expand or develop the text. The picture becomes a visual duplication of words that helps the child get a better understanding of the story. Picture books can also create feelings of presence or a certain atmosphere and arouse emotions, thereby creating context, introducing and building characters who act and react to events, which help the perception of the plot and characters involved. Images can also expose aspects beyond textual content, sometimes aspects that are difficult to describe with words. Sometimes, pictures show the development of stories that are not explicit in the text and therefore the images can fill gaps in the text. Both text and images leave a gap for the reader to fill in with their own knowledge, experience or imagination. Picture books support reading comprehension and sequence comprehension (Haggstrom, 2020).

Early childhood get various opportunities to play and learn through their daily activities, such as playing with toys, watching television shows and reading picture story books (Simcock & Heron-delaney, 2016). Besides being fun, reading picture storybooks can improve children's understanding compared to other media such as videos and others (Lin, 2012). Picture storybooks provide a verbal reading experience and iconic code so that children do not only rely on reading texts but also "read pictures" (Mateo, 2015). It is strongly believed that the decoding interaction process between writing and drawing takes place simultaneously. And it helps children to understand the plots of the story, characters and moral messages easily in picture storybooks. In addition, picture story books have an important role in improving children's cognitive abilities (Ozturk, Sendogdu, Seker, & Tekinsen, 2011). Through listening to stories from picture storybooks or reading pictures does not directly affect language skills, but children are encouraged to imagine.

Experts make the case for reading early story books, highlighting how stories can support emerging literacy skills. Acquisition of children's vocabulary is supported when books contain words that are rarely encountered by children in spoken language. Print knowledge - a multidimensional construction of children's emerging knowledge about the form and function of written language - is also supported through reading story books. Through the interaction of adults and children, children acquire a variety of literacy skills that arise including the organization of books and print, printed meanings, letters, and words, which are the basis for future reading achievement (Justice & Piasta, 2011).

Children are exposed daily to symbolic media, such as print or electronic images. Raynaudo and Peralta (2019) compared children's learning about concepts (camouflage) with two different picture book formats. The results show that children transfer concepts to both types of images. Children give camouflage more justification after reading than before. However, in the post-test, children in book conditions performed better than children in e-book conditions; also, they provide more camouflage justification with prints than with electronic images. Given these results,

they assume that the debate is not only about the use of new technology in the educational environment, but also about how to use it to diversify the learning experiences that traditional media have provided.

Tomé-Fernández, Senís-Fernández, and Ruiz-Martín (2019) research provides qualitative evidence that picture books can be a fun and interesting method to trigger productive discussion and increase student awareness and sensitivity. His research can test the effectiveness of the use of picture books in the classroom, insofar as the combination of text and pictures can offer students more information in the easiest way. Selected picture books open the door to new perspectives on various knowledge such as cultural integration, or disaster management. The selection criteria for picture books can be considered valuable and efficient for finding the right material to be implemented in early childhood learning.

Therefore, the design and implementation of disaster management for children is the main concern and thought in this research. In compiling thinking and implementing disaster management for children, researchers start with the development of instructional media in the form of picture storybooks that can be integrated in the classroom learning activities between teachers and children. The research about the improvement of picture storybooks for disaster management is a solution to find learning innovations at early childhood education level. It also develops a framework of thought and application of the importance of children's knowledge and understanding of disaster management which is a part of curriculum formulation policy at early childhood education level in Indonesia. Furthermore, the improvement of picture storybooks being learning media becomes a forum for innovative thoughts and practices in providing concepts and implementation of disaster management appropriate to children's needs and characteristics.

### 3 METHODS

This study uses educational design-based research (DBR) (Anderson & Shattuck, 2012). Design-based research is claimed to have the potential to bridge the gap between educational practice and theory, because it aims to develop theories about specific learning domains and the means designed to support that learning. DBR thus produces useful products (e.g., educational material) and accompanies scientific insights on how these products can be used in education (McKenney & Reeves, 2012). It is also said to be suitable for overcoming complex educational problems that must be addressed holistically (Plomp & Nieveen, 2007). Design model product used is a model Sugiyono (2017) consisting of several steps: 1) knowing the problem and / or potential, 2) data collection, 3) product design, 4) design validation, 5) design revision, 6) manufacturing of products, 7) limited field trials, 8) product revisions, 9) major field trials, 10) product revisions, 11) operational trials, 12) product revisions, 13) dissemination / mass production. The research about the improvement of picture story books on disaster management was carried out for children aged 5-6 years (group B) at TK Labor FKIP Riau University, Pekanbaru City, Riau Province.

Product trials in the form of picture storybooks are carried out in two stages, there are individual trials and field trials. Individual trials were conducted by a number of children (12), early childhood education teachers (19), parents (11), and experts (3). And field trials were conducted at the school that consist of 48 children. The results of the effectiveness of the picture story book illustrated by disaster management using quasi experiments then analyzed with t-test statistics.

### 4 RESULT AND DISCUSSION

The results of this study are illustrated picture story books affecting the knowledge of children aged 5-6 years regarding disaster management in Pekanbaru, Riau Province. Riau Province was chosen because it is prone to floods, landslides and whirlwinds in the rainy season and land and forest fires in the dry season. The book designed consists of five titles such as earthquake, flood, landslide, tsunami and land and forest fires. The reasons use the five titles is based on the history of natural disasters that often occurred in Riau Province and in Indonesia. Therefore, the researcher develops those five story titles that is expected to provide information for young children in their future. Fortunately, children have some information and knowledge on how to implement disaster management. The stages of media research illustrated picture story books consist of:

#### 4.1 First Design

The products of this research and the development are compiled from the results of observations and analysis of needs in the field and conducted literature studies to form design 1 which is the initial draft of a picture story book. In the first figure, the manuscript is still in the form of handwriting from the writing team. Then it was discussed with three experts (BPBD, PAUD and Indonesian) until it produced design 2 that contained a picture story text using the Corel Draw application.

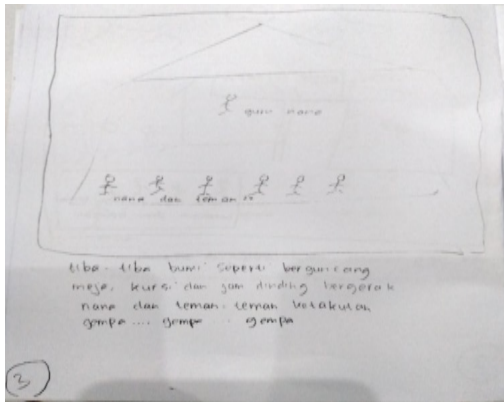


Figure 2. First Design of Picture Story Books Disaster Management

#### 4.2 Second Design

The revision results of small group trials, then revision of the development of second design which is the basis of third design. In the second design 2, the text of the book has been drawn using the Corel Draw application and it has differences with the previous design.

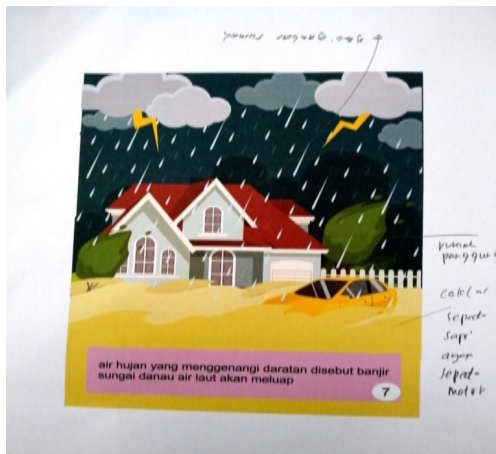


Figure 3. Second Design of Picture Story Books Disaster Management

#### 4.3 Third Design

The development of third design was carried out with a large group trial, after that a revision was made become the final draft for testing the effectiveness of the picture storybook media on disaster management. The revision is in the form of a replacement image of the house. In the second design, the picture of the house is too luxurious and does not reflect the actual condition. According to Indonesian Language experts and Riau Province BPBD, residents who are victims of flooding are people who are in the lower middle class. So, the research team replaced the image of the house to be simpler.



Figure 4. Third Design of Picture Story Books Disaster Management

#### 4.4 Final Draft

The results of the improvement of the picture story book media illustrated by disaster management produced a final draft to be passed to the effectiveness test of the media. To this final draft, the research team added images of flood victims who sat on the roof of their homes as a way to save themselves from flooding. It is similar to the advice of experts BPBD Riau Province. In addition, the color of the car was changed to red. It is similar to the advice from Indonesian Language Experts, because in the third design the colors of the car are yellow. As the result, the readers are difficult to distinguish between brown flood water and the color of a yellow car.



Figure 5. Final Design of Picture Story Books Disaster Management



Figure 6. Final Cover Design of Picture Story Books Disaster Management



A picture storybook consists of five titles and combined into a series of disaster introduction for children aged 4-6 years. The purpose is to make it easier for teachers, parents and children to use this book simultaneously or separately. Therefore, there is not one book title is missing or tucked and the users feel comfortable using the book as a media to introduce various disaster management actions to children.

#### 4.5 *Media Feasibility Test of Picture Story Book Disaster Management*

##### 4.5.1 *The Expert Validity Tests*

This research involved Indonesian language education experts, Early Childhood Education and BPBD of Riau Province.

Table 1. The Percentage of Expert Validity

No.	Experts	Questionnaire	Percentage	Media Feasibility
1	Language	77/80x100%	96,25%	Excellent
2	Early Childhood Education	60/65x100%	92,31%	Excellent
3	BPBD	54/55 x100%	98,18	Excellent

##### 4.5.2 *Empirical Test*

The empirical tests were carried out with a small group trial at Kindergarten of Labor FKIP Riau University, a large group trial was conducted outside of the kindergarten and an effectiveness test of a disaster management picture storybook.

##### 4.5.2.1 *The Effectiveness of Disaster Management Picture Book*

The purpose of the effectiveness of illustrated story book testing is to know the improvement of knowledge of disaster management for children aged 5-6 years. This research also looked at differences of children's knowledge before and after using of picture story book media. Pre-test and post-test data on the effectiveness test can be seen in the table 2:

Table 2. Results of Pre-test and Post-test Effectiveness Tests

No	Respondents	<i>Pre-test score</i>	<i>Post-test score</i>	Percentage
1	R1	9	14	23.8%
2	R2	11	19	38.1%
3	R3	10	14	19.0%
4	R4	10	19	42.9%
5	R5	12	17	23.8%
6	R6	8	14	28.6%
7	R7	8	14	28.6%
8	R8	12	18	28.6%
9	R9	9	15	28.6%
10	R10	10	17	33.3%
11	R11	9	15	28.6%
12	R12	11	15	19.0%
13	R13	9	14	23.8%
14	R14	8	14	28.6%
15	R15	10	19	42.9%
16	R16	10	14	19.0%

17	R17	10	16	28.6%
18	R18	8	17	42.9%
19	R19	13	17	19.0%
20	R20	9	15	28.6%
21	R21	10	17	33.3%
22	R22	12	20	38.1%
23	R23	11	17	28.6%
24	R24	10	19	42.9%
25	R25	8	15	33.3%
26	R26	14	21	33.3%
27	R27	8	15	33.3%
28	R28	11	16	23.8%
29	R29	13	21	38.1%
30	R30	7	10	14.3%
31	R31	12	16	19.0%
32	R32	13	17	19.0%
33	R33	14	19	23.8%
34	R34	12	16	19.0%
35	R35	9	14	23.8%
36	R36	9	16	33.3%
37	R37	7	13	28.6%
38	R38	9	16	33.3%
39	R39	10	15	23.8%
40	R40	12	21	42.9%
41	R41	11	17	28.6%
42	R42	11	16	23.8%
43	R43	8	13	23.8%
44	R44	7	12	23.8%
45	R45	7	14	33.3%
46	R46	11	14	14.3%
47	R47	13	21	38.1%
48	R48	8	17	42.9%

If  $t_{count} = 25.790$  with a probability value / sig  $t = 0,000$ . Because  $p < 0.05$  and  $t_{count}$  greater than  $t$  table ( $25.790 > 2.011$ ), it can be concluded that  $H_0$  is rejected and  $H_a$  is accepted. It means that there is a significant difference between before using the media story book illustrated by disaster management (pre-test results) and after using the media (post-test results) for 48 samples (Respondents from TK Labor FKIP Riau University).

Pre-test data show that children's knowledge about disaster management is in the low category with an average of 47.92% for children aged 5-6 years in Pekanbaru City, Riau Province. It is supported by the lack of socialization and disaster education and the lack of availability of learning media to increase knowledge about disaster management. It is similar to the results of research from (Mudavanhu, Chipo Muzenda Manyena & Collins, 2016) which revealed that children have never been involved in training of the emergency situations when disasters occurs both they are at home and at school. It has a negative impact on efforts to reduce risk and losses from natural

disasters. Research conducted by (Delicado, Rowland, Fonseca, & Nunes, 2017) suggests that in Portugal, children are seen as passive participants in order to reduce the risk of natural disasters. It is caused by the frequency of occurrence of natural disasters in the country is rare. In fact, Indonesia is a country prone to natural disasters. All parties should be better prepared to face disasters, especially for early childhood. A picture story book is one way to help that problem, because the children are easy to interact with messages conveyed in an interesting way.

After the post-test was conducted, there was an increase in the knowledge of disaster management with the highest percentage increase of 42.9% with a pre-test score of 47.92% and post-test to 76.88%. This shows that the children were enthusiastic about the picture book media. The child seemed to really enjoy the activity when the teacher read the book during the opening and closing activities of learning in class. Media in this case has a dominant role for students and teachers to improve the quality of the learning process, increase active participation and a variety of student (Manjale & Abel, 2017). On other occasions children can read books in the reading corner in each class with friends or individually. Designed drawings and simple and interesting story lines help children to see the concept of disaster management in a concrete (real) way. In this case this picture book is a media as well as an educational game tool that can be used as a tool and material for playing and is able to make early childhood more easily acquire new understanding concepts (Latif, Zukhairina, Zubaidah, & Afandi, 2013), so they can increase children's knowledge about disaster management with a relatively short period of time and a significant percentage increase. In addition to this, the picture book media can also improve literacy skills. Without realizing it with a pleasant impression the child will absorb a variety of vocabulary that is presented so that the vocabulary increases, so that it can affect the development of children's literacy (Pramitasari, Yetti, & Hapidin, 2018).

Parents as the main educators for their children can introduce disaster management through reading story books at home. The explanation given by the parents can provide good support to build information on how to do mitigation, during the disaster and the recovery period. Disaster management studies for children conducted by (Proulx & Aboud, 2019) determined that early childhood has the potential to participate actively in a series of disaster management activities and it is going to reduce the risk of various losses from disaster events. According to this opinion, it is recommended for teachers, headmaster, disaster experts and the government to accommodate the existence of disaster management education at various levels of education. Relating to the disaster management education curriculum, the teacher will be able to develop various learning plans. One part of the planning is learning media that is adjusted to children's characteristics

A study conducted by (Suryaningsih & Fatmawati, 2017) revealed that picture storybooks can improve children's knowledge and understanding of disaster mitigation actions. The reading material helps children recognize some of the actions that children must do before a disaster occurs. It is similar to (Adiyoyoso, 2018) reading material related to disaster management actions can contribute positively to children's readiness in facing disasters. A similar sentiment was also conveyed by (Halim, Abd Rahman, Zamri, & Mohtar, 2018) that picture storybooks support children's understanding of concepts conveyed through images, colors that attract attention and also fewer verbal texts. The research findings of Pyle & Danniels (2016) state that picture storybooks are useful in communication interactions with children when they play with their friends. It is concluded that picture story books are the ways to communicate about various things contained in the book and the children also get more knowledge. For this reason, all levels of education, such as early childhood education, primary and secondary education should have reading material that is suitable for students' characteristics. Because reading material is to cultivate prevention habits, children as agents of change and experiences in childhood will be embedded in the long term.

Research carried out by (Sawyer et al., 2018) states that the important thing of organizing disaster management for young children is to involve children actively, in this case children are known as a potential component in efforts to reduce disaster risk. The same thing was conveyed that the active involvement of children in disaster risk reduction efforts will get positive results (Tatebe & Mutch, 2015). Furthermore, the methods and approaches used should be appropriate

to the way how children learn by playing activities. Every child's effort in the process of introducing disaster management should be appreciated by parents and teachers. A condition that is no less crucial is to provide an appropriate explanation when children ask questions in order to build their knowledge. The concept that was built by children from an early age about disaster management will be the foundation at the next level of education.

Another finding that is no less important in this research development is to introduce disaster management to children, it requires various media that is suitable for children. For the application and use of the media, picture story books are adjusted to the children's characteristics whether the media can be used in groups or individually.

## 5 CONCLUSION

The conclusion of this study is that children and early childhood education teachers in Pekanbaru are lack of knowledge about disaster management. The picture storybook became the output of this research can be used as a learning media choice for children, teachers and parents in implementing a series of disaster management activities in the territory of Indonesia. This picture storybook is adapted in the form of local and central government policies by disseminating it to various existing early childhood education institutions. Another benefit of this disaster management picture storybook is prepared with the specialties of early childhood in the form plot of the story, pictures, local wisdom and moral messages.

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