# adelila mind mapping

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# The Development of Mind Mapping Media in Flood Material using ADDIE Model

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## Abstract

This study aimed to develop a media mind mapping through ADDIE model in teaching the flooding material. The samples that used were students of class X-3 Madrasah Aliyah (MA) Darul Ulum totalling 30 students. This type of study was the Research and Development (R & D) by using ADDIE models. Data collected by using mind mapping sheets that students' work. Data was analyzed by descriptive statistics. Results of this study found that in developing mind mapping media through five stages, namely: analysis, design, development, implementation and evaluation. The study concluded that the media mind mapping that have been developed and validated could be a viable and effective media used in the learning process.

**Keywords**: *mind mapping, ADDIE and flooding*

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## Introduction

Learning that student need was not only about repeating the ideas, but the learning was able to explore the ideas of students. The purpose was they have ability of creativity and ready to deal with the problems of flooding in the future. Flood material that included disaster material just has introduced from geography in 2013 curriculum. The process of knowledge transfer in general and specific disaster was not easy, but this knowledge would be easier remembered and understood by MA students, based on condition where their age who still relatively teens it made them still very fresh and still eager to learn new things. Therefore, it was necessary a media that made student interested to learn it.

One of the various media that can be used to provide material and measure students' understanding is mind mapping. According to (Subiyono, 2010), he said that the brain is able to receive information in the form of images, symbols, images, music, and other related functions right brain. Mind mapping media is a combination of writing and drawing that combines the functions of the brain simultaneously and are related to each other , so that the right brain and the left brain will work optimal. Development of media mind mapping in teaching flooding material would be required for Darul Ulum MA students. It can be better for them to understand the material that was given because they was often affected by flooding and also it would create their creativity to give idea in their work in a mind mapping.

## Literature Review

### Mind Mapping

Originally the concept of mind mapping was introduced by Tony Buzan 1970. Mind mapping was a way noted by developing visual learning style that uses words, lines, colors and symbols to maximize brain power to remember all the information. Mind mapping technique invites students to explore their potential to become learning in life (Sapitri 2010). Creating their motivation to bring every idea is illustrated by using little words (Rohana, 2009) .Mind mapping is a medium that can be used to enable students  gather more detailed knowledge without knowing the hierarchical structure of the concept, there is a more inclusive concept on the top of map, getting to the bottom of the structure of the map show  specific concept Mind mapping states meaningful relationships between concepts are linked by words in a semantic unit (Sustramawati, 2008).Mind mapping is one of the cooperative teaching method suitable for improving concentration and memory of students, because mind mapping is mapping the mind which contains the keywords of a topic (Rahayu, 2015). Mind mapping is applied to the subjects of Geography. According Seyihoglu (Anwar, 2015) mind mapping could be considered as an alternative model for the study of learning geography , because geography many concepts that made student should learnt, by using mind mapping learning model, students can learn a lot of information in an easier and shorter.

### ADDIE Model

According Sugiarsana, (2015) that the reason to choose the ADDIE model because it described the process of developing a simple and consists of five sequential stages in a systematic and interactive. In addition, ADDIE models were often used to describe a systematic approach to the development of this material. Model consists of five main phases of stages namely:
1) Analysis, a needs analysis to determine the problem and the appropriate solution and determine student competency.
2) Design, determine the specific competencies, methods, teaching materials, and learning strategies using mind mapping.
3) Development, produce mind mapping to be used in the learning program.
4) Implementation, implementing learning programs to implement mind mapping
5) Evaluation, to evaluate learning programs and evaluation of learning outcomes.

### Flooding Materials

Flood is defined as an event in which water flooded the land, or land which should be dry, causing physical harm to people and the impact of social and economy. Flooding can also be interpreted as an event overflow of water above normal cannot return quickly absorbed by the land surface path (Suprijono, 2013). In this study, the case that would be discussed was about the cause of the flooding, the actions carried out during the flood, post-flood recovery, mitigation of floods and the impact of floods by using mind mapping.

## Research Methods

The type of this study was the R & D and it was conducted in August and October 2015. Sample used in this study was the Darul Ulum Madrasah Aliyah (MA) students of class X-3, there were 30 students in this class. This class was chosen due to it is one of social science class which study geography. In addition, the student of this class was also considered more active. Technique data collection used sheets of validation feasibility media and students' mind mapping works. Then, data were analysed using statistical descriptive. Feasibility assessment media was validated by two experts, e.g. expert in the field of flood and in the field of education. Tools and material used to make mind mapping was HVS A4 paper, coloured pencils, sharpener, eraser and imagination. Every student's mind mapping results would assessed based on indicator that has score from 1 to 4, then the total score of each student could be assigned into one of four categories available.

## Results and Discussion

Mind mapping was developed based on the model ADDIE which consists of five phases, namely Analysis (analysis), Design (design), Development (development), Implementation (trials) and Evalution (evaluation). The five phases would be described as follows.

### Analysis

Phase analysis was based on the analysis of the needs of students and teachers. It purposed to find out the problems faced by students or teachers, and to determine whether the study that was developed media was needed by students or teacher. Rusman, (2011) explained that the media is an introductory message from the sender to recipients, thus the media is a vehicle for channeling information learned or dealer messages. Media is one of the communication tools in conveying the message is very useful when implemented into the learning process. Based on the results of students' and teachers, geography about flooding material required a media that delivery content or concept becomes easier so that students can better understand each concept in a flood of material. The media that suit to deliver this material is mind mapping. Media can facilitate students' mind mapping MA level in remembering the information through the colors and symbols, because the brain more easily absorb the information by using symbols and colors.

Rekayana, (2013) performed early stage needs analysis by means of interviews to obtain a general overview of the methods and the learning process in SMP Negeri 5 Tejakula and analyzed the characteristics of the students at the school in question to ensure media suitable to be applied in SMP Negeri 5 Tejakula. There was also research by Sugiarsana, (2015) who found that, using the model ADDIE in film development learning in the analysis phase of analyzing some of the issues involved, namely the lack of media-based learning theme in accordance with Curriculum 2013 and the limited ability of teachers to develop learning media. Furthermore, the author could be decided the right solutions for these problems. Next research by Natalina, (2015) who stated that at this stage of the analysis the researchers conducted several needs analysis includes an analysis of the curriculum, teaching materials analysis as well as analysis teacher. Analysis learning device aimed to obtain an overview of the technical assessment conducted by teachers at school. Then researchers conducted a pre-survey to school learning to see the device in the form of a syllabus, lesson plans, worksheets source of student learning and assessment tools that have been developed by teacher. The purpose of the analysis stage was to obtain specification purposes in learning. According to some previous research, the analysis undertaken in this study was also to find media proper and appropriate for solutions to problems in learning.

### Design

At this phase, the products were designed in the form of a medium composed of curved lines that form the branches that could connect to each keyword with other keywords by using colours and symbols called by media mind mapping. This medium was used for flood of material on Geography at Darul Ulum MA X classroom. Media was designed in order to attract students in recording and considering in teaching learning so that would produce a fun learning concept. Map can generate original ideas and spark memories with ease. Mind mapping technique invites students to explore their potential to become learning in life (Sapitri, 2010). Rekayana, *et.al*., (2013) did the design for the development of interactive media in a way to design and determine the matter in accordance with the characteristics of learners and the demands of competence. Further research by Sugiarsana, (2015) who designed each of the film for each learning activities based on indicators of learning. Natalina, *et.al*., (2015) also designed a learning device based on seven class-based assessment techniques to be developed.

Based on some previous researches, the design of mind mapping was also based on several indicators to be achieved. Based on basic competence obtainable some of the indicators that would be achieved from a flood of material that was caused flooding, actions taken during flood, post-flood recovery, mitigation of floods and the impact of flooding. Initial design media mind mapping can be seen in Figure 1.
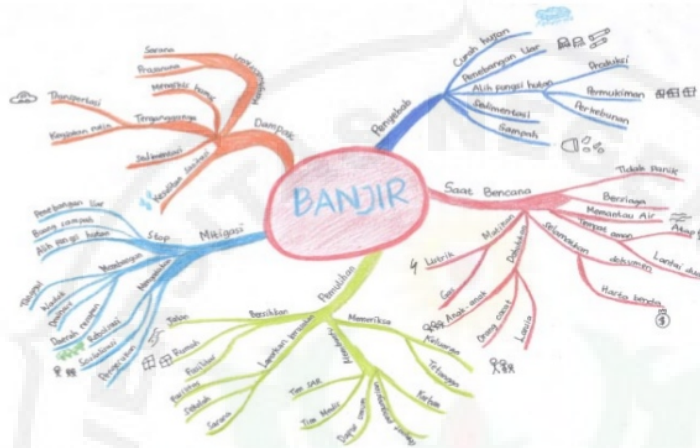


Figure 1. Initial design media mind mapping

Some components contained in the media mind mapping namely:

1) Indicators of material that will be achieved.

   Mind mapping summarizes all indicators of learning to be reached about the flood covering, the cause of the flooding, the action taken when a flood occurs, post-flood recovery, mitigation of floods and the impact caused by flooding.

2) Making the main idea, branches and sub-branches.

   Making the main idea in the form of the subject to be discussed, for example, the subject that would be discussed here are flooded. Then said flooding was placed in the middle of the paper and made a symbol of support. Furthermore, the manufacturing branch of the main idea, each branch and sub-branch explain each indicator about the flood. Each branch consists of a keyword and a sub-branch consists of keywords or keyword phrases in the form of shaped points. Sub branch explained the main idea and the main branches was interrelated. For example on the branch of the cause, then the sub branches to explained what are the causes of the flooding, the rainfall, forest conversion, trash, sediment and logging.

3) Colours, lines and symbols.

   The used of color in each branch must be different. It was intended to create a more lively mind mapping and adding energy to creative thinking, and fun. The lines were made in mind mapping in the form of curved lines, because the linear line will dull the brain. Furthermore, the addition of a symbol that supported mind mapping to make it more interesting.

**Development**

At this phase of the manufacturing media, as described in the design phase, the components that would be created the main idea, the main branch, sub-branch and symbols that was supported. After media design process, then develop the media that has designed and also validate against the media that have been designed. Validation was done to see if the media is designed fit for use or not. Validation of the media was done by two experts, one expert in the field of flood and the other experts in the field of education to look at the suitability of the media that would be used for student and teacher. Media learned the preliminary draft still has some weaknesses and shortcomings of some components, such as in terms of the symbol of the main idea, neatness, adding symbols and some additional sub-branch. Media learning then developed to become better and interested. Some components developed on the advice validator as follows.

a) Symbols main idea.

Symbols on the main idea in the preliminary draft change a form that was originally only red circle to form a splash of blue water that supports the basic idea that named the flood. Symbolizes water splashing water flooding problems in the form of increased volume of water more than usual.

b)  Main Branch.
    The main branch is made of curved lines and created keywords to explain what will be described from the main idea.

c)  Sub Branch.
    Sub branch pulled out of the main branch to explain in more detail about the description of the main idea and the main branch. For more examples of the main idea, the main branch and sub-branch can be seen in Figure 2.
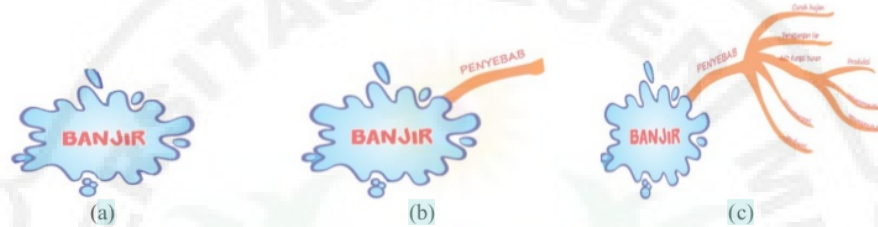


Figure 2. (a) Symbols Main Idea, (b) Main Branch and (c) Sub Branch

d)  Addition symbol
    In the preliminary draft there is little symbol on the media mind mapping, then there is a change in the form of additional symbols support in each branch and sub-branch. This makes the material mind mapping floods in more interesting to learn. Examples of symbols that supports as shown in the following figure 3.
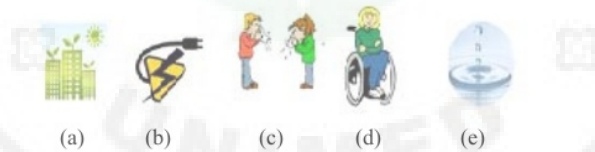


Figure 3. Symbols used in *Mind Mapping*

Therefore some of the suggestions and input from two experts for the improvement of media mind mapping to be better and deserves to be used, then the media mind mapping was undergone some changes. Results of media improvement can be seen in figure 4 below.
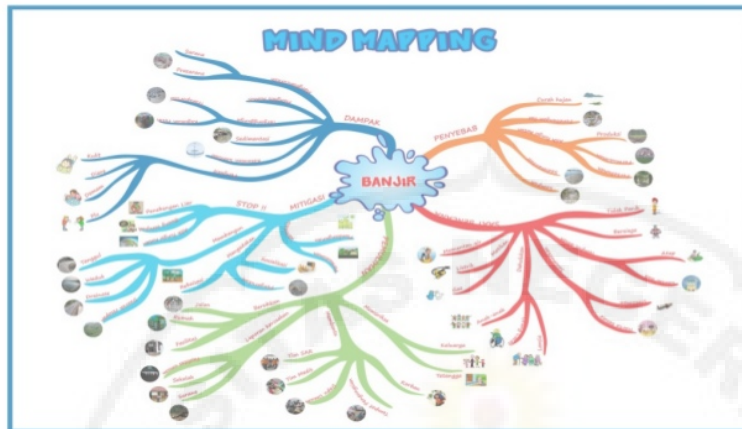
Figure 4. Mind Mapping Media

### Implementation

At this phase, after the media declared valid by the validator, the media could be implemented or applied in learning process. Products trials conducted in class X-3 MA Darul Ulum. Initial learning process, teachers convey the purpose of learning to be done. Furthermore, the learning process was done by delivery of material about the flood by using media, teacher with mind mapping have been developed. Students listen and pay attention to what was conveyed by the teacher. Delivery of content via media mind mapping flooding was expected to build a map of the student's mind about the flood. After the delivery of content, the next activity was the students were asked to pour all of the information they receive about the flood of material into a work of mind mapping in accordance with the creativity and ideas of their own. The teacher distributed paper and colour pencils to students to support the manufacture of their mind mapping. In product testing, teacher or researcher role as companion and guide students in creating the products they make. Having completed work on its mapping mind respectively, then the teacher asked the students to collect their work for later in the evaluation or assessment given by the teacher. Some documentation when the implementation of learning can be seen in figure 5 below.



(a)          (b)

(c)



(d)

Figure 5. Implementation Activities: (a) Indicates Media Mind Mapping, (b) Student Makes Mind Mapping, (c) Teacher Guiding Students and (d) Results of Mind Mapping Students

**Evaluation**

The final stage of the ADDIE model of that phase of the evaluation or the evaluation of the results obtained by the assessment of the mind mapping media and mind mapping was made by students.

**Evaluation of Media Mind Mapping**

Media mind mapping developed by researchers has been validated by two validators. Based on score obtained from the validator 1 was 94.11 per cent, it can be concluded that the media mind mapping into the category of very decent. Scores obtained from the validator 2 was found to be 89.7 per cent were also categorized as very feasible. This shows that the media mind mapping was very fit for use by teachers in the delivery of learning objectives.

As for some advice and input from the validator to repair media mind mapping as follows.

1) At the beginning of the design mind mapping, the basic idea was only a symbol of a red circle and untu repair symbol was changed to a blue color and was shaped to fit the water splashes the theme that was flooding.
2) The initial design mind mapping was the work of the hands of researchers, but for neater then the design was created using Corel Draw.
3) At the beginning of the design mind mapping was still a lack of a symbol of support, then the repairs necessary to add symbols that support to make this medium more attractive.
4) Validators in the field suggest additional flood mitigation for the main branch, sub-branch added relocation and residential buildings. Next to the main branch of impact, added illnesses.

Figure 6 shows media mind mapping before and after validated as well as some improvements and has been revised.
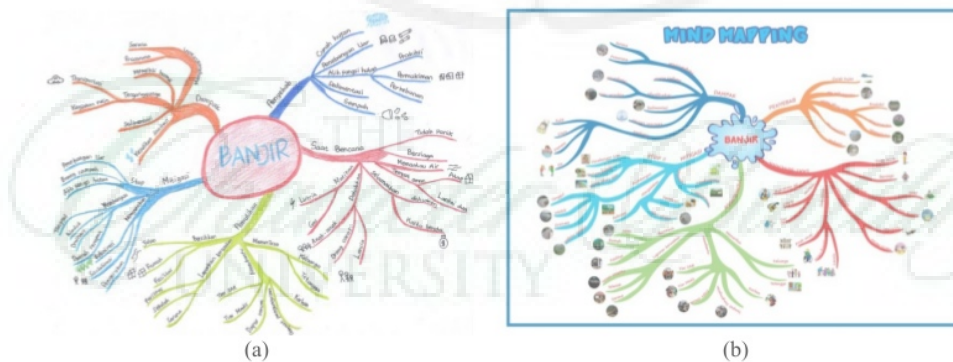


(a)

(b)

Figure 6. (a) Before Validation, and (b) After Revised

**Ratings for Mind Mapping Students**

        Mind mapping made by students were assessed based on five assessment criteria that each criterion consists of four indicators that have scores of different levels. Assessment was done by using a scale of 1 to 4 and further scores obtained by each student summed and assigned into one of four categories. From total of 30 students, there were only three students who got into the category of highly skilled, which means just as much as 10 percents students. Furthermore, there were 16 students who were categorized as skilled or as much as 53.3 per cent of students and eleven students in the category of skilled enough or as much as 36.6 per cent of students. The results of mind mapping students can be seen in Figure 7.
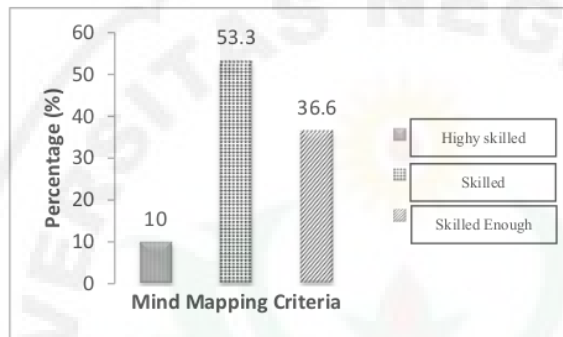


Figure 7. Mind Mapping Chart Student Assessment

        The results obtained in the product of mind mapping can be seen that the highest category was obtained by students who have skill. In mind mapping assessment of students who get highly skilled category shows that the mind map has been made to meet the assessed aspects .Aspect include the suitability of material, colour variations, connecting branch, layout, and images that was used. The suitability of the material aspects of the mind map has been made in accordance with the material flooding. Key word to getting the lowest scores, it was because the students just to make the idea of branches and subsidiaries in key words only in the absence of short sentences explained.

        Mind mapping on the assessment of the students who get skilled category shows that of the criteria assessed also fulfilled the mind mapping assessment scoring only different lies on the main idea, the suitability of the location of the material, and giving the image that does not correspond to the keyword. Furthermore, the assessment mind mapping students who get category skilled enough to show that aspects of assessment of students was still not right in the sort of material, giving an image that does not correspond to keywords, and students only made the idea of branches and subsidiaries in key words only in the absence of short sentences described.

        Before students make mind mapping their work, teachers had first to teach them how to make mind mapping. There were examples of mind mapping made by the teachers so that they could saw an example for the creation of mind mapping them as well as their flexibility in making mind mapping. Students were very enthusiastic use mind mapping, because they thought it fun and more effective than regular notes they made during this time despite of mind mapping result that the students still showed unsatisfactory results. As for some of the students' mind mapping results can be seen in figure 8.
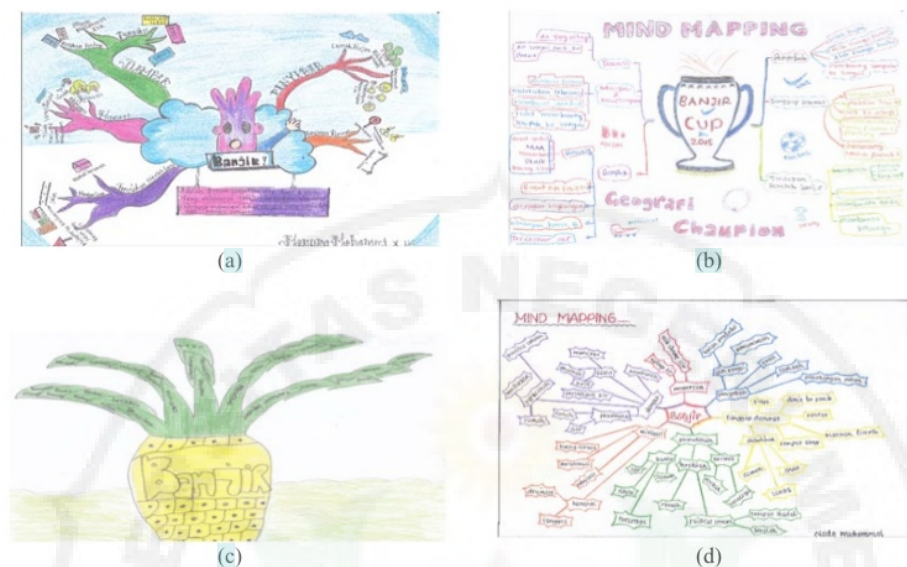
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Figure8. Mind Mapping products by students: (a) and (b) Mind Mapping Students Category Highly Skilled, (c) and (d) Mind Mapping Students Category Skilled Enough

Results of the study by the Firman, *et.al*., (2015) which was about the development of media mind mapping. Results showed that the learning media validation categorized as good with an average score of 83.33 percent, so that the resulting media fit for use as an alternative medium of learning in school. The study by Syah, (2015) regarding the application of the learning model mind map found thatit could also improve learning outcomes IPS at a grade V. Constraints in the implementation of learning with learning model mind map could be resolved with some solution so that the learning can be run properly. Research by Oktavianty and Rusmimanto, (2015) also supports this research. The obtained results of the feasibility study media Buzan'si Mind Map amounted to 82.1 per cent included in the category of good or feasible. The response of students to study media was found to be 83 per cent included in both categories, and the level of mastery learning outcomes of students was 92.8 percent which is categorized as excellent category. Based on some previous studies it could be concluded that the media mind mapping was very feasible and effective for use in learning.

## Conclusions and Recommendations

Based on research that has been done, it could be concluded that the media mind mapping was developed in five stages, namely analysis, design, development, implementation and evaluation. Results of the validation by experts showed that the mind mapping a viable media used and the results of students' mind mapping made to facilitate students in understanding the material flood. In connection with this, it was advisable for teachers to use the media mind mapping on other materials deemed necessary.

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