# THE ASSESSMENT RESULT OF MIND MAPPING IN IMPLEMENTATION OF BILINGUAL INTERACTIVE E-BOOK MEDIA THROUGH MIND MAPPING STRATEGY ON CHEMICAL BONDING

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## Abstrak

Tujuan dari penelitian ini adalah untuk mengetahui hasil penilaian dari *Mind Mapping* siswa yang mempengaruhi hasil belajar pada penerapan media *e-Book* interaktif bilingual melalui strategi *Mind Mapping* pada materi pokok ikatan kimia untuk meningkatkan hasil belajar. Penilaian dilakukan pada kelas X IPA 5 di SMAN Mojoagung-Jombang yang terdiri dari 31 siswa. Metode yang digunakan adalah *one shoot case study*. Penilaian *Mind Mapping* terdiri dari proporsional bentuk dan isi *Mind Mapping* yang harus sesuai dengan rubrik penilaian. *Mind Mapping* dikatakan baik apabila nilainya $\geq 2{,}80$. *Mind Mapping* siswa yang mendapatkan kategori baik sebanyak 96,77%. Hasil *Mind Maping* juga mempengaruhi hasil belajar pada materi ikatan kimia. Dari penelitian, hasil belajar siswa meningkat hingga 87,09%. Persentase hasil *Mind Mapping* siswa membuktikan bahwa strategi *Mind Mapping* dapat meningkatkan hasil belajar siswa pada materi Ikatan Kimia.
**Kata Kunci:** penerapan *e-Book*, penilaian *Mind Mapping*

## Abstract

*The aims of this research are to know the assessment result of student's Mind Mapping that influence of student's result study in implementation of bilingual interactive e-book media through Mind Mapping strategy on chemical bonding to increase learning outcomes. The assessment was applied in X science 5 of SMAN Mojoagung-Jombang with 31 students. The method used is one shoot case study. The assessment of Mind Mapping covers the Mind Mapping proportional and content that must suitable with Mind Mapping's rubric. Mind Mapping is called excellent if the score $\geq 2.80$. Student's Mind Mapping gets excellent category as many as 96.77%. This result of student's Mind Mapping also influences the result study in chemical bonding material. From the observation, student's result study increase until 87.09%. Nevertheless, the percentage of student's Mind Mapping result proves that Mind Mapping strategy has been able to increase the result study of student in chemical bonding material.*
**Keyword:** *e-Book implementation, Mind Mapping assessment*

## INTRODUCTION

Education is one of organization to develop and increase the quality of human source. Development of education demand all of people can adapt with knowledge. Improvement education system in Indonesia is done by many ways. One of them is changing curriculum of education. The changing of curriculum is started in 1994 until 2013.

In some schools, such as SMAN Mojoagung-Jombang, chemistry and the other science matter is studied by using English. Learning process in English has higher difficulties than learning process by using Bahasa Indonesia. It is caused by many terms that are not understood by student. These difficulties will influence the result study where, basically learning process is communication process. Communication process is process of information delivery from information

source to information receiver through certain media. Media used must be interesting, so it will increase interest of student to study. For example for material that needs clear explanation such as chemical bonding.

Chemical bonding is material that is study about bonding between atoms or molecules. Atomic bonding and ionic molecule is not appeared. So, student must imagine the process without knowing by them. It can make student difficult to understand and influence the result study of student.

Based on the result of inquiry, only 31.25% student said that chemical bonding is difficult material but 62.5% said that their result study in chemical bonding is less good with minimal criteria is 77. From this condition, it must be found the right solution to understand chemical bonding material. One of the ways is by using media in chemical bonding material.

One of interesting media that can be used is bilingual e-Book through Mind Mapping strategy. Bilingual e-Book is chosen because improvement in technology and information sector gives impact in all of life aspect such as education. Besides that, e-Book refers to communication ability by using verbal and auditory that is drawn by symbols that memorable.

Another good way that can be done is by using Mind Mapping strategy. This strategy is suitable with the actual condition that 81.25% student want to used Mind Mapping to study chemical bonding and 84.4% never uses Mind Mapping in chemical bonding material.

Mind Mapping strategy is an effective note technique by drawing colorized pictures to mapping information. This strategy was developed by Tony Buzan. This is the most effective method and used to develop creative idea [1]. Effective notes can judgment time by helping store information easily and memorable if needed. The purpose of notes is to get main point from a book or material. Hopefully,

by using Mind Mapping strategy, student can easily to understand more about the matter. Some function of Mind Mapping strategy are flexible, concentrate, increasing of understanding and pleasure.

This research will get down to the assessment result of Mind Mapping product process by the students in class X science 5 that consists of 31 students in SMAN Mojoagung-Jombang. The Mind Mapping produced by the students will be analyzed to find out the increasing of result study in chemical bonding material. Hopefully, Mind Mapping strategy will be able to help students to understand chemical bonding and increase their result study.

## METHOD

The methods used in this research is one shoot case study with the pattern is:

$$X \rightarrow O$$
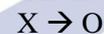
The assessment of student's Mind Mapping product during implementation bilingual interactive e-Book through Mind Mapping strategy on chemical bonding is based on score criteria of each observed aspect. The final score criteria is obtained from the result filling in assessment sheet of Mind Mapping. The filling of the assessment sheet is suited to the criteria of Mind Mapping. There are 6 main criteria in Mind Mapping where each criterion is complemented with score range that should be given. Those criteria are described in table below:

Table 1. Assessment of Mind Mapping Criteria

| **Proportional of Mind Mapping** |
| --- |
| Theme's position (main idea) at the middle, written in capital + picture / symbol. |
| Branch's form is thick and long, has different color for each branch and there is a main idea |
| Twigs / complementary ideas is smaller than the branch l, completed with keyword (2 words maximum), its lenght suits the keywords/ picture |

| **Proportional of Mind Mapping** |
| --- |
| above it. |
| Twigs / complementary ideas is smaller than the branch l, completed with keyword (2 words maximum), its lenght suits the keywords/ picture above it. |
| **Content** |
| Suitability of the material on the branches and twig |
| The material is related to Chemical Bonding |

Ariyanti[2]

The mean of each filled score on assessment sheet of Mind Mapping will be analyzed by the following formula:

$$\bar{x} = \frac{\sum x}{n}$$

[3]

Where:

$\bar{x}$ = mean of observed aspect score of each student

$\sum x$ = total of each observed point score

$n$ = total of observed aspect

Eventually, the mean of each point will be converted into what has been categorized in table below:

Table 2. Linkert Scale

| Score | Category |
| --- | --- |
| 1.00-1.59 | Bad |
| 1.60-2.19 | Less Good |
| 2.20-2.79 | Fair |
| 2.80-3.39 | Good |
| 3.40-4.00 | Very Good |

[4]

Student skill in making Mind Mapping is excellent if the result $\geq 2,80$.

The assessment of student's result study in implementation of bilingual interactive e-Book through Mind Mapping strategy on chemical bonding is based on score that is gotten by student in pre-test and post-test. The score is calculated by calculation below:

$$Score = \frac{\sum B}{N} x100$$

Where:

$\sum B$ = total question with the correct answer

N = total of question

Result study of student is increased if post-test score is higher than pre-test score and the minimum score is 77.

**RESULT AND DISCUSSION**

Mind Mapping assessment result can be seen in the following table 3:

Table 3. Mind Mapping Assessment Result

| Aspect | Average Score |
| --- | --- |
| Theme's position (main idea) at the midle, written in capital + picture / symbol | 3,35 |
| Branch's form is thick and long, has different color for each branch and there is a main idea | 2,86 |
| Twigs / complementary ideas is smaller than the branch l, completed with keyword (2 words maximum), its lenght suits the keywords/ picture above it. | 3,27 |
| Twigs / complementary ideas is smaller than the branch l, completed with keyword (2 words maximum), its lenght suits the keywords/ picture above it. | 3,44 |
| Suitability of the material on the branches and twig | 3,49 |
| The material is related to Chemical Bonding | 3,41 |
| Average | 3,31 |
| Category | Good |

This suggests that some students have succeeded in making a Mind Mapping after the use of interactive e-Book in accordance with their creativity. The success in making Mind Mapping is

supported by the score data of pre-test and post-test that is given in the last of learning process. Score data of the students are shown in Table 4 as follows:

Table 4. Student Score Result

|  | Pre-test | Post-test |
|---|---|---|
| Average score | 22, 58 | 83,87 |
| Clasical thoroughness | 0% | 87,09% |

Furthermore, there are some examples of student's Mind Mapping that will be described based on its category obtained.

1. Excellent Category

    Here's one of Mind Mapping's result which belongs to excellent category, based on the assessment aspects
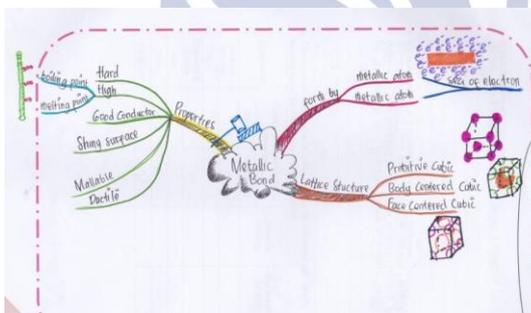


Figure 1. Student's Mind Mapping that get score 3,83 and include in excellent category

The result of Mind Mapping above belongs to excellent category. It is suggest that Mind Mapping created is suitable with assessed aspects. The assessment of Mind Mapping includes material suitability, color variation, branch, layout, and image used. Considered from material suitability aspect, Mind Mapping has been created based on the material. It can be seen by using keywords used are related to the metallic bonding material and it's been created based on questions on the Pre-Mind Mapping in e-Book or worksheet.

Color variations must be seen clearly in Mind Mapping. The same goes for the branch used from the central to the explanatory ideas which also become smaller in its accordance To Mind Mapping assessment criteria. Worse score is given to the image used, because not all the keywords are completed with picture or symbol which is related with keyword in each branch.

2. Good Category

    Here's one of student Mind Mapping's result which belongs to good category, based on the assessment aspects.
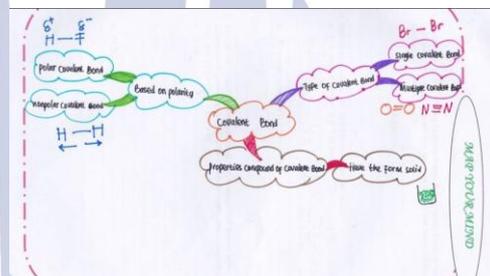


Figure 2. Student's Mind Mapping that get score 3,17 and include in good category

The result of Mind Mapping above belongs to good category. It is also seen by using assessment aspect of Mind Mapping. The assessment is included with material, color variation, branches, layout and image or symbol used. Consider from the material, the student's Mind Mapping had been not suitable with all of the material. There are still not fully material. It can be seen by the keyword that is used in each branch although it is helped by Pre Mind Mapping that must be answered before making Mind Mapping. The other worse score is given that the explanatory ideas have the same branch with keyword.

The positive score is given by the using of color variation and symbol that is support the keyword. Almost all of keyword in branch have symbol.

3.  Fair Category

Here's one of student's Mind Mapping which belongs to fair category based on the assessment aspect
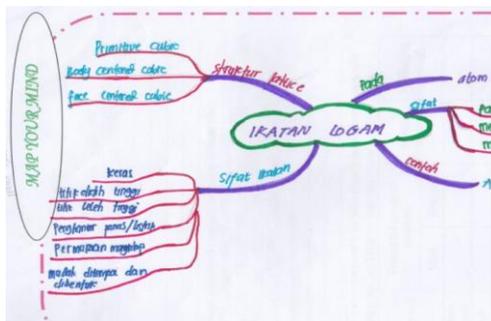


Figure 3. Student's Mind Mapping that get score 2,42 and include in fair category

The result of Mind Mapping above belongs to fair category. It is suggest that Mind Mapping created is less suitable with assessed aspect. The assessment of Mind Mapping includes material suitability, color variation, branch, layout and image used. Based on the material, this Mind Mapping is suitable but Mind Mapping is not only assessed from the material but also the other aspect.

In this Mind Mapping, there is same color of branch and all of keywords don't have image or symbol. Using of colors and symbol is important because color and symbols can increase memory [5]. Besides that, using of colors and symbol is used to differentiate Mind Mapping and concept map.

**CLOSING**

Based on the discussion above, it can be concluded that student's Mind Mapping get excellent category as many as 96.77%. This result of student's Mind Mapping also influences the result study in chemical bonding material. From the observation, student's result study increase until 87.09%.

From the student's Mind Mapping, there are still some weaknesses such as Mind Mapping are made lies on the using of picture and color. So, need some development to fulfill with the all of aspect that is assessed to make Mind Mapping.

Nevertheless, the percentage of student's Mind Mapping result proves that Mind Mapping strategy has been able to increase the result study of student in chemical bonding material.

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