Promoting Oral-Communication Skill to the students of Seventh Grade on Earth Science Content Using Multimedia Based Integrated Instruction (MBI$_2$)

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Abstract. Student should improve their communication skills whereas they are in school and college to enhance their adaption for the 21-century skills requirement. The aim of this study is promoting students’ oral-communication skills through Multimedia Based Integrated Instruction (MBI$_2$) on earth-science content. The research method that is utilized in this research is embedded mix methods toward 35 seventh grade students that consist of 17 males and 18 females. Oral-communication skill rubric which has been developed is used to assess students’ oral-communication skill. The aspects that assessed are eye contact, intonation of speech, content, enthusiasm, and mannerisms & body language. We assessed each aspect using the rubric and then interpret it into categories which are need an improvement, fair, good and excellent. The result shows that the average score of five oral-communication skill aspects in every meeting are 8.40 (earth structure sub-content) that is categorized as Fair, 13.75 (earthquake sub-content) that categorized as Good, 14.83 (tsunami sub-content) that is categorized as Good and 15.67 (volcano sub-content) that is categorized as Good. In conclusion, MBI$_2$ can promote students’ oral-communication skill of seventh grade on earth science content.

1. Introduction
Nowadays in the 21st century, science and technology raise hastily. The increasement of science and technology influence on the value of human lifespan, for example in science education area [1]. Communication skills is one of important skills for student to succeed in the 21st century [2]. Commonly, communication can be well-defined as a process of bartering information, from the person giving the information through verbal and non-verbal methods, to the person receipt the information [3].

There are four recommendations learning activity to facilitate the students to promote their communication skills [4]: a) Teaching communication in the context of basic science, b) practicing and revising, c) finding routes to give student coursework a real audience, d) expanding training to oral communication.

One of science contents on seventh grade student in Indonesia curriculum is earth-science content. Generally, it is deliberating about earth layer, earthquake, tsunamis, and volcanos. Earthquakes are temporary shockwaves that happen in the earth crust or rarely in the upper mantle by the consequence of the natural influences and processes [5]. If the earthquake happens under the sea, it’s possibly to generate tsunami. Tsunami can be definite as long-period as water waves produced by a sudden displacement of the water surface. Commonly, tsunami generation is assumed of as a creation of seismic
disorders on the sea floor with rapid sea floor disorders ascribed to undersea earthquakes, subaerial or undersea mass flows (slides), volcanic eruptions, sea floor collapse or bolide influences in the ocean \cite{6}.

Volcano sub-content specifically discuss about volcanic eruption, a volcanic eruption is a dynamical process of outflow that is considered as follows: (1) mechanical properties, composition, and structure of the erupted products; (2) their mass rate of eruption; (3) their velocity; (4) the flow regime, namely the way these characteristics change in time \cite{7}.

Multimedia Based Integrated Instruction (MBI$_2$) is development outcomes from Computer Assisted Instruction (CAI). In this study, MBI$_2$ integrating synectics learning model, student activity sheet, e-book, multimedia shows, and assessment of earth-science content. Most of sub-contents that are discussed in the class is categorized as abstract content for the students. For instance, the process of tectonic earthquake or the process of volcano eruption, it can’t observe directly from the simple experiment. One of methods that can help student to learn about abstract content is utilizing computer simulation. Computer simulation has positive impact for student abstract knowledge \cite{8}.

Generally, the aim of this study is to promote students’ oral-communication skill on earth-science content using multimedia based integrated instruction.

2. Method

Mix-method procedures was applied in this study. Mixed method research involves collecting data quantitatively and qualitatively, bringing together two forms of data, it was also using different designs involving assumptions and theoretical framework \cite{9}. On the other hand, the process of collecting research data using different methods and research approaches to produce complementary data to minimize errors and avoid the lack of important information \cite{10}.

As much as 35 seventh grade students in junior high school consist of 17 males and 18 females were involved in this study as sample. They were divided into seven groups; the first group consists of 5 students. Science-earth content delivered in four-time meeting. The first meeting started on March 29th, 2017, and the last meeting was on April 23th 2017.

To measure students’ oral-communication skill, standardized oral-communication rubric based on San Diego State University and International Reading Association was developed. In this study, oral-communication aspect that assessed based on those standardized rubrics shown by table 1.

| No. | Oral-Communication Aspects | Description |
|-----|---------------------------|-------------|
| 1   | Eyes contact              | Keep the audiences’ attention by using eye contact directly |
| 2   | Intonation of Speech      | Speaking with fluctuation in volume and inflection to emphasize the key points |
| 3   | Content                   | Presenting statement and argument about the topic that is discussed |
| 4   | Enthusiasm                | Demonstrating enthusiasm about topic during entire presentation |
| 5   | Mannerism & Body Language | How presenter utilizing body language maintain audience’s interest |

Students’ oral-communication skill assessed every meeting, in the learning process through MBI$_2$ students are given some questions about the sub-content being studied. MBI$_2$ presentation will show the example of the questions:
Content: Earth-science  
Sub-content: Tsunami  

| Description | Annotation |
|-------------|------------|
| This frame is showing the questions to be answered by the students on their paper sheets. | There was no sound (narration) when the questions arise. Questions arise in sequence, question number 1 arise first then question number 2 arises afterward. |

**Figure 1. MBI2 Story Board example on Third Meeting**

Subsequent to the question that is displayed in MBI2, students were given an occasion to discuss with the group-mate then wrote the answer on the paper sheets. Then, the delegation from every groups were given the opportunity to explain the answer in front of the class. While the students presented the answer, they communication skill was being assessed by oral-communication rubric then get the score. Score was obtained by students interpreted based on SOS Interpretation that shown by Table 2.

**Table 2. Students’ Oral-communication Score (SOS) Interpretation**

| No. | Students’ Score | Interpretation |
|-----|-----------------|----------------|
| 1   | 4≤SOS<8         | Need an Improvement |
| 2   | 8≤SOS<12        | Fair |
| 3   | 12≤SOS<16       | Good |
| 4   | 16≤SOS≤20       | Excellent |

**3. Result and Discussion**

Because of the limitation of meeting time, it was not necessarily the same students who are assessed on each meeting. At the first meeting, there were five students code P17, P21, P22, P24, and P25. Then, at the second meeting several students code P12, P17, P21, and P25, third meeting there were P3, P10, P17, P21, P24 and P25. For the last meeting, there were three students P18, P21, and P25.

**Table 3. Students’ Oral-communication Average Score on Four Meetings**

| No. | Student’s Code | Total Score for each Meeting (M) |
|-----|----------------|----------------------------------|
|     |                | M1 | M2 | M3 | M4 |
| 1   | P24            | 13 | -  | 17 | -  |
| 2   | P21            | 10 | 13 | 14 | 16 |
| 3   | P17            | 8  | 14 | 16 | -  |
| 4   | P10            | -  | -  | 11 | -  |
| 5   | P3             | -  | -  | 18 | -  |
| 6   | P12            | -  | 15 | -  | 15 |
| 7   | P22            | 8  | -  | -  | -  |
| 8   | P18            | -  | -  | -  | 16 |
| 9   | P25            | 10 | 13 | 13 | 15 |

| Average | 9.80 | 13.75 | 14.83 | 15.50 |

| Interpretation | Fair | Good | Good | Good |
The scores of students with codes P24, P10, P3, P12, P22, and P18 cannot describe transformation in oral-communication skills because the data obtained is very limited or even inadequate. However, the students with codes P21 and P25 got the opportunity to speak from the first until fourth meetings, so considered P21 and P25 can show the transformation in oral communication skills. The transformation graph about the students’ score of oral-communication skills for P21 and P25 as follows:

![Graph of P21’s and P25’s oral-communication score]

By reasoning, the transformation graph shows P17’s score, because P17 gets oral-communication in sequent for three meetings.

![Graph of P17’s oral-communication score]

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**Figure 2.** Graph of P21’s and P25’s oral-communication score

**Figure 3.** Graph of P17’s oral-communication score

Based on the Figure 2 and 3 we know that at the first meeting students that are coded by P17, P21 and P25 got score with interpretation Fair. Students’ oral-communication score increased at the second, third, and fourth meeting that is interpreted as Good.

**4. Conclusion**

The aim of this study was to promote students’ oral-communication skill using MBI$_2$ on earth-science content. The data showed that students’ oral-communication score was promoted by using MBI$_2$ in the learning process. However, it needs further comprehensive study about students’ oral-communication assessment. It required a lot of time to assess students’ oral-communication skill. Thus, the duration should be considered.
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# Appendix

## Oral-Communication Skill Rubric

Adapted from Oral Communication Rubrics by College of Business Administration (CBA) San Diego University and International Reading Association

| Criteria          | 4-Excellent                                                                 | 3-Good                                                                 | 2-Fair                                                                 | 1-Need an Improvement                                                                 |
|-------------------|-----------------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Eyes contact      | Maintaining the attention of all audiences using direct eye contact, rarely see notes. | Being consistent with eye contact with the audience, but keep looking at the notes. | Showing few eye contact with the audience, reading many notes.         | There is no eye contact with the audience, always reading notes.                      |
| Intonation of Speech | Speaking by using a clear intonation to keep the audience's attention and emphasize the tone on the keyword. | Speaking by using a clear intonation.                                  | Speaking with a fluctuating tone (sometimes sounding sometimes not), do not use clear intonation. | Saying something that cannot be heard, using monotonous tone that causes the audiences not to notice. |
| Content           | Understanding the content and being able to answer questions with the complete answers. It can define the subject matter clearly. | Simply understand the content and can answer questions with almost complete answers. The student can define the subject matter, but a little less clear. | Could not understand the content but can answer the questions by an incomplete answer. Trying to define the subject matter. | Has not an understanding of the content and cannot answer the questions. The student cannot define the subject matter. |
| Enthusiasm        | Showing more enthusiasm in explaining the content during the presentation. So that, the audience is motivated to understand the content being submitted. | Showing enthusiasm in explaining the content during the presentation. Succeed in increasing audience interest in understanding the content being submitted. | Showing enthusiasm for describing content during presentation inconsistently. Less successful in increasing audience interest to understand the content being submitted. | Did not show any enthusiasm in explaining the content during the presentation. Not successful in increasing the interest of the audience to understand the content being submitted. |
| Mannerism & Body Language | Showing the body movements that support how to deliver the message to keep the audience concentrating. | Did not show body movements such as foot or hand movements that interferes with the concentration of the audience. | Showing body movements such as foot or hand movement but it was not too disturbing audience concentration. | Showing body movements such as foot movements or excessive hand movements that disrupt the concentration of the audience. |