

CHAPTER III

METHODOLOGY

A. Research Method and Design

1. Research Method

This research was conducted in order to determine the aspects of science comic after the making and evaluation of it. This research implemented descriptive research with survey method, which means that the data collected were the result from questionnaire were analyzed in description (Jackson, 2012). This method was used to describe the nature of situation and to explore the cause rather than judging or interpreting.

2. Research Design

A one-shot comic in light topic was created by the researcher. The procedure consisted of three objectives infused to thirteen pages of comic. The comic then was supervised by final paper supervisor before it is assessed by the experts. After getting suggestions and revisions until final assessment, the comic was brought to students to be reviewed.

B. Participant of Research

The subjects for this study were three experts in each aspect: artwork, language, and science content for comic validation. Those experts come from various backgrounds based on what they expertise of. For comic impression, the subjects were 9 students of junior high school in West Java, Indonesia.

C. Operational Definition

1. Science Comic Development

Development of science comic is a making of a comic—specifically science comic—consisted in several parts: content analysis to determine which content that will be delivered in the comic, material source analysis in which the content is taken from, aspects analysis to determine each aspects of comic building, and comic making which is divided into two: outline and creative process. Outline is the base of the comic while the creative process is how comic is made from sketching until finishing.

According to Eisner (2000), the making of comics is better to involve only one person as the story-maker and artist, thus the characteristic of this science comic development is made by one person. This has advantages so as to synchronize the images with narration in order to communicating the idea. McCloud (2006) and Tatalovic (2009) emphasized that the making of comics also should consider some aspects, hence their adapted theory is composed into three main aspects that determined—and also evaluated—the making of this comic: Content, Artwork, Language, and Uniqueness.

2. Science Comic

Science comic is a series of picture arranged in sequence in order to present narration of the story, so that the messages about science concept are able to be delivered to readers. It is very important for science comics to provide real information about science, whether it is in the form of dialogue in balloon text or just plain description. Good science comics are ones that are not only attractive and drawn in high definition, but also are able to communicate the essence of the story, which is science content and concept (Tatalovic, 2009).

Science comic used in this research was written by the author, taking the topic of light for junior high school. The comic product was purposed as an additional read besides main textbook to be learnt during teaching and learning activity. The form of comic was a *manga*, adapting Japanese comic style and ended in one episode only (one-shot). The main comic-building aspects of this product were evaluated by feedback from experts, and students.

3. The Quality of Science Comic

A science comic can be said as ‘good’ science comic based on these aspects: *Content*, *Artwork*, *Language*, and *Uniqueness*. The three main aspects and one additional aspect to fulfill the criteria were taken from *Making Comics* by Scott McCloud (2006) and Tatalovic (2009).

Artwork aspect scopes the choice of moment, flow, frame, image, character design, facial expression and body language. *Language* aspect is consisted of storyline, word-chosen, and narration placing inside of the comic. The last is *Content* aspect, the most focused aspect in this research due to ‘science’ word in science comic. The Content here includes objectives taken, depiction of application and/or implementation of the theory, specific example and relevant. Good science comic must have aim to educate by infusing the concept through media, no direct explanation, and close to children’s environment. One additional aspect is *Uniqueness*. Uniqueness is to show something new such as modern depiction of science besides scientist with lab coats and messy white hair. Other important things in Uniqueness are how students can relate their life and how it contains Indonesian’s values.

All of the aspects that determine the quality of this science comic were evaluated by questionnaires to each expert and students.

D. Research Instruments

To measure the appropriateness and how far the comics design met students' actual need in learning science, there were two types of questionnaire:

1. Likert scale and ratings

The questionnaire was including two big aspects: the technique of making comics and science comic characteristics including pictures, words arrangement, and the content; with scale of 1 to 4 to determine if the points in comic were met the expectations.

Table 3.1 Likert Scale for Experts' Questionnaire

Scale	Criterion	Point
D	Dissatisfied	1
SD	Somewhat dissatisfied	2
SS	Somewhat satisfied	3
S	Satisfied	4

For students' questionnaire, there was a 4-rating scale to determine whether the comic is a good read or not. The elaborated scoring for ratings is in the form of rubrics as seen on Appendix B.1.1 and B.2.1.

2. Written review

This questionnaire was the extension of the scales, consisted of blank space for suggestion and opinion about the comic using the same aspects.

E. Instrument Validation

Before the instrument was used, there was instrument analysis to check whether the test's quality meets the standard of what was measured or not. Both of the instruments were judged by supervisors before handing it to experts and students.

F. Data Collection

In gathering data using the instrument above, some different ways were taken for each subject in this study:

1. Experts

Questionnaire for each expert was given directly with the sample of comic, outline, and judgment check. After the comic has been examined, the questionnaire was returned.

The data collected from the experts were in ratings and suggestions.

2. Students

Questionnaire given to students was in two forms: soft and hard copy. Students then filled the questionnaire and returned it directly or through e-mail or social media message feature. Data collected from students were in form of ratings and opinions or impression.

G. Data Analysis Technique

After collecting data by using the instruments, the result will be analyzed in descriptive way regarding to each variable's reference.

1. Likert scale and ratings

The analysis for experts' questionnaire was a quantitative measurement, adapted from Riduan (2010), then comparing the result with total number of highest score and converts it to percentage.

$$\% = \frac{Na}{Nx} \times 100\%$$

(Riduan, 2010)

After that, the media can be interpreted by this category based on Arikunto (2002) as follow:

Table 3.3 Percentage Range and Descriptive Criteria of Program

No	Interval	Criterion
1	76% < score ≤ 100%	Very Good
2	51% < score ≤ 75%	Good
3	26% < score ≤ 50%	Fair
4	0% < score ≤ 25%	Poor

(Arikunto, 2002)

As for students' questionnaire, the overall rating was the average of all rating. The rating explanation is the same as criterion in Table 3.1.

2. Written review

The analysis of written review from respondents was done descriptively, with steps of analyzing the input, grouping the analysis result, and comparing it to literature (Creswell, 2008). These description analyses were separated based on the respondents and the aspects evaluated.