

# *Validity of Biology's Students' Worksheet Equipped by Pictorial of Concept Map for Students of Class VIII at Junior High School*

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**Abstract** –The problems were found based on observations are in the learning process students' use worksheets that were created by teachers and worksheets that contained in their handbook. In addition, at the learning process of students still have difficulty in understanding and answering the questions of student's worksheets because there is not a summary of the material and concept map that assists students in learning. This study has the goal to produce student's worksheets that equipped by pictorial of concept map for the first half of grade VIII valid at junior high school. This study is a study of development using Plomp development consists of three phases, preliminary research, prototyping phase, assessment phase. The results of this study Showed that the development of an integrated student's worksheet is valid. The Conclusions of this research are student's worksheet of Biology that equipped by pictorial of concept map for first half of grade VIII at junior high school is valid.

**Keywords** – Developing; Student's Worksheet; Concept Map.

## I. INTRODUCTION

Education has a very important role because education will bear the quality of human resources, has a stable and independent personality, and determine the quality of a nation through various potentials. According to Law No. 20 2003 "Education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that learners are actively developing the potential for him to have the spiritual power of religion, self-control, personality, intelligence, noble character, and skills needed him, society, nation, and country".

Improving the quality of education is the responsibility of all those involved in education, especially teachers. Teachers are at the forefront in education. The success of a teacher in the highly expected. To meet these objectives, we need a good preparation. Teachers have a variety of tasks in learning in school, one of them, teachers are required to be able to compile an innovative teaching materials and in accordance with the student's ability.

Teaching materials is a set of infrastructure or learning tool that contains learning materials, methods, limits and

how to evaluate which is designed in a structured and interesting in order to achieve the expected goals (Widodo, 2008: 40). Teaching materials are materials that are used to assist teachers in implementing the learning process in the classroom. Teaching materials designed to be used by teachers to help students in the learning process so that learning is most effective. In making teaching materials, steps should be done is to choose the appropriate student ability (Trianto, 2010: 213)

Student worksheet is one of the many print instructional materials used by teachers in learning activities at school. According Prastowo (2011: 204), Student worksheet is a sheet of paper containing the material, summary and guide the implementation of the tasks that must be done by the students and should refer to the basic competence is achieved. Student worksheet a book supporting students in achieving basic competencies needed to direct the learning process of students.

With the active participation of students, student worksheet is expected, so it can provide more opportunity in the process of building a student's knowledge. Additionally

helpful student worksheet to activate students in the learning process and help students to develop the concept.

Based on the analysis of student worksheet used in schools is known that there are several shortcomings including: (1) Student worksheet has the look, these simple and has not specified a competence standard, basic competence, indicator and learning objectives students must achieve. (2) On student worksheet has not included a summary of the material that can help students understand important concepts in a material. (3) Student worksheet used colorless and has not listed the images

Included preferably student worksheet standards of competence, basic competence, and indicators and learning objectives so that later produced student worksheet appropriate and referring to the curriculum (Trianto, 2010: 213). In the manufacture of student worksheet should also include material that is more compact and cover the whole material that aims to increase students' understanding of the concepts learned. In addition, in the manufacture of construction student worksheet one of the requirements that must be met by Widjajanti (2008: 4) was to be much use illustrations. Illustrations can be understood students one of them is through the images included in student worksheet. Images are loaded is simple and clear picture. Additionally, student worksheet used not provides an empty space which required students to write answers to questions in the student worksheet.

The results analysis of the show that student worksheet. Student worksheet needs to be developed as a companion for students in learning at school because of high student needs. To help students understand concepts in Biology learning concept approach is needed. The approach of this concept can lead students in mastering the correct concept. One application of the concept approach is the use of concept maps. According Mursiti (2007: 68) Map concept scheme can be illustrated to demonstrate the meaning of the concepts in a series of propositions. Propositions are two or more concepts associated with the words in a systematic unit so that it can be seen the relationship between one concept to another needed to understand the material (Yamin, 2012: 117).

Concept maps are made also colored so it is more effective to use, because the pattern and color will affect a person's brain power. As expressed by Svantesson (2004: 27), that "The right hemisphere is also seen more skilled in distinguishing dimensions, patterns, and overall". Thus, the pattern and color will further optimize the workings of the brain.

Map concept in student worksheet be developed also comes with pictures and more students are expected to understand the concepts learned and can connect from one concept to another. Their images aim to help students to visualize the material. Image has several functions and advantages, according Sanaky (2011: 71), the picture is more meaningful when compared with the words, easy to understand, and be able to visualize in detail. Pictures contained in student worksheet is a color image, which is expected to improve the competence of students, learning becomes more attractive, and easier understanding the concept.

## II. REVIEW OF LITERATURE

Learning is marked by changes in a person. According Hamalik (2009: 28), learning is the process of changing the behavior of a person through the interaction between the individual and his environment. Furthermore, Aunurrahman (2009: 34), said learning is an attempt to change the input of students who have not been educated, become educated students, students who do not have knowledge of something, a student who has knowledge.

Student worksheet the sheets contain tasks that must be done by the students which can help or guide students in learning. According Prastowo (2011: 204), student worksheet is a sheet of paper containing material, summaries, and directives implementation of learning tasks that must be done by learners, which refers to the basic competencies that must be achieved. According Trianto (2009: 223), student worksheet contains a collection of activities that must be performed by students in an effort to maximize the understanding of the formation of the basic capabilities corresponding indicators of achievement of learning outcomes that must be taken.

The concept according to Susanto (2013: 8), is something which is reflected in our thoughts, ideas, or an understanding. The concept is something that has been embedded in a person's heart and is reflected in our thoughts, ideas, or an understanding. Concept maps, Yamin (2012: 117), it is stated that meaningful relationships between concepts in the form of propositions. Propositions are two or more words associated concepts of words in a systematic unit. We make concept maps consist of one word that can be connected with one another so as to form a proposition.

Concept maps are representations that illustrate the relationship between the various concepts. Concept maps should be hierarchical with a concept that is on it, and by connecting in accordance with the right words. Proposition

connect and express link between the concepts. Concept maps can have the structure of spider webs or chains, so that the relationship between concepts can be dynamic (Dixon, 2014: 3).

Map display concept is similar to the usual concept map. Only in this pictorial concept maps using the picture as a complement to represent the concepts that will be presented. That is the concept maps to be made, further emphasized by the assertion in the form of images. Excess image is able to expand stimulus and can claim a difficult thing to be delivered (Nasution, 2010: 197). Concept maps can be designed in a simple form, but when modified by drawing maps of course this concept would be more attractive to students. There are four aspects assessed to determine the validity of students worksheet developed, namely the feasibility of content, language, presentation and graph (Depdiknas, 2008: 28).

### III. METHODOLOGY

This research is research and development. The model was developed by Tjeerd Plomp.

#### 3.1 Development of Prototype I

Prototype I students worksheet design of the design stage include pictorial concept maps. Students' worksheet designed in collaboration with the practitioner (lecturer). After the design stage of the design is complete, the method formative evaluation done of the evaluation itself by using the check list. The purpose of the evaluation is to obtain the relevant product criteria. After the first prototype was revised, followed by the next stage of the prototype II.

#### 3.2 Development of Prototype II

Phase is done in consultation with a specialist (expert) to see the validity of students worksheet include map display concept based on expert assessment (expert). Formative evaluation of the validity of the questionnaire form and sheet students worksheet expert consultation (expert).

### IV. RESULTS AND DISCUSSION

#### 4.1 Result

Results students' worksheet development incorporating pictorial concept maps can be seen as follows.

##### 4.1.1. Prototype I

Prototype the design stage students' worksheet equipped with a concept map display in accordance with the curriculum 2006. Students' worksheet designed to include a

concept map display. Students' worksheet is designed using Microsoft Office Word 2010 and Microsoft Publisher 2010. The composition of students' worksheet consists of cover, instructions for use students' worksheet, competence standard, basic competence and indicator, pictorial concept maps, a summary of the material, exercises, evaluation. Students' worksheet has been prepared, and then evaluated their own with sheet self-evaluation in Table 1.

Table 1. The Results of Self Evaluation

No.	Aspects that are fixed	Reason repair
1.	Concept maps	Concept maps have not been structured and separated in one material, be revised to change the map display concept put together for a single material
2.	In students worksheet Problem	Problem previously only be objective, and written about the essay

##### 4.1.2. Prototype II

At this stage of consultation with experts (experts) to look at the validity of students worksheet that have been made. Validation is done by 3 1 validator experts and practitioners. Validation students worksheet based on four aspects: the feasibility of the content, language, presentation and graph. Data from the validation by the validator can be seen in Table 2.

Table 2. Results From Validation Of Student Worksheets By Validators

No	Aspect of assessment	Average (%)	Category
1	Aspect of eligibility contents	82.86	Valid
2	Aspect of language	84, 37	Valid
3	Aspect of the presentation	77.97	Valid
4	Aspect of Graph	84.16	Valid
Average		82.34	Valid

Based on the results of validation by validator, students' worksheet with pictorial concept map has a value of 82.34 with valid criteria.

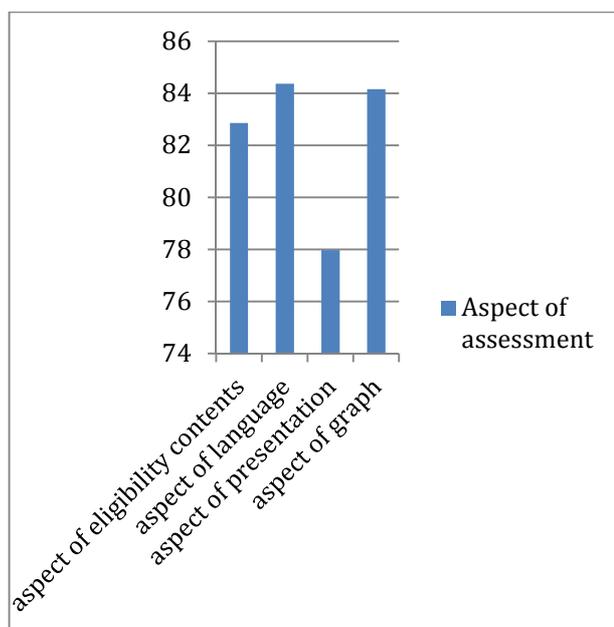


Figure 1. Aspect of assessment

#### 4.2 Discussion

Students' worksheet developed validated by three lecturers as experts and one teacher teaching science. Based on the overall validation results students worksheet equipped with a map display concept developed rated valid. This shows that students worksheet equipped with a pictorial concept map is correct and in accordance with aspects of the validation. Validation aspect consists of four aspects, namely the feasibility in terms of content, language, presentation and graph.

In terms of feasibility students worksheet based content with value 82.86% declared valid, it means that the material contained in the students' worksheet which has been developed in accordance with SK and KD, students worksheet contents are in accordance with the child's development and in accordance with the competence of students. This is in accordance with the opinion Afriani (2014: 100-101) found in the writing of teaching materials should conduct an analysis concerning curriculum SK, KD, indicators and learning materials and adapted to the stage of development and needs of students so as to improve students' knowledge and understanding. According Prastowo (2011: 28) one uses students' worksheet for students are learners find it easy to learn each competency to be mastered.

Students worksheet developed are in accordance with the needs of teaching materials, the fit between substance students worksheet with instructional materials. Students' worksheet also useful for enhancing the knowledge to their

pictorial concept maps, and evaluation exercises that can help students understand and test the student's ability. Therefore, this student's worksheet can be used by students in the learning process.

Based on the aspects of language, Biology students worksheet equipped with a map display concept has validity value of 84.37% with valid criteria by a validator. This means student's worksheet has the form and the letter can be read, instructions and information in clear and understandable students worksheet, students worksheet prepared in accordance with the rules of Indonesian is good and right, and use simple sentences, clear and not cause confusion for the reader. According Saputri (2015: 110) a use of language that is appropriate to the students' understanding and clarity of the information presented in students' worksheet assist students in mastering the concepts of the material being studied. The language used in teaching materials let communicative language, easy to read so it is easy to understand the students and easy to use by teachers and students (Dirmali: 2015: 110)

Based on the presentation aspect students' worksheet Biology equipped with a concept map display with a value of 77.97% with valid criteria, this shows that student's worksheet already qualified presentation. Terms relating to the presentation students worksheet; Indicators and Learning Objectives on student's worksheet formulated clearly, the order of presentation in accordance with the indicators students' worksheet learning. Students' worksheet stimulus and response can lead students through content on students' worksheet. Students' worksheet presents completeness of the information through the material description and map display concepts presented can enhance students' understanding of the learning material. One of the goals of teaching materials for students are the students find it easy to learn each competency to be mastered and get a chance to learn independently (Prastowo, 2011: 28). According Suswina (2010: 77) Presentation of images on teaching materials cause students are very interested in learning, the image can illustrate the concepts of the material being studied.

Based aspect of graph students worksheet equipped with a display concept map has a value of 84.16% with valid criteria. This shows that students worksheet made fulfills aspect of graph covering, type and size of the font used on students worksheet clear and easy to read, view cover students worksheet attractive, content layout in students worksheet clear images on a concept map display made precisely and attractive and design students worksheet equipped with a map display made interesting concept.

According Saputri (2015: 115), the image gives a great influence in the appearance of a medium that can attract students to learn. Students' worksheet attractive appearance is important aspects because students would be interested in viewing students' worksheet (Oprasmani, 2016: 95). One purpose of teaching materials for students according to Prastowo (2011: 28) is "learners find it easy to learn every competency that should be mastered". Through students' worksheet look interesting and not boring for students, students are expected to be motivated to understand the material in learning.

Students' worksheet usage in learning based on research results showed various positive assessments. One of them, according Saputri 2015 using students worksheet learning can help students develop thinking ability is maximized through activities which are in students worksheet. Students' worksheet usage in learning also helps teachers improve student interest in learning. According to Mila 2014, learning by using students' worksheet can increase student competence (cognitive, affective and psychomotor).

Overall students worksheet rated with an average score by experts and practitioners is 82.34% with valid criteria. Based on the four aspects that have been assessed, it can be said that students worksheet which include map display developed concept is valid and can be used in the learning process. Valid declare the truth about all aspects assessed on a product, according to Rohmad (2011: 14) a product declared valid if adequate product components and showed consistency between these components.

## V. CONCLUSION

Students' worksheet equipped with a map display concept for class VIII at junior high school produced has been declared valid by experts and practitioners with a value of 82.34% so students worksheet equipped with a map display concept developed can be used as a valid teaching materials for teachers and students.

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