DESIGN OF BIOLOGY LEARNING MODULE ORIENTED MIND MAP WITH VARIOUS WORD OF WORD FOR SECONDARY MIDDLE FIRST CLASS VIII

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ABSTRACT

The success of a teacher in implementing learning depends on the insight, knowledge, understanding and level of creativity in managing teaching materials. One form of processing of subject matter is the module. A teacher is expected to develop a module that can help achieve the learning objectives. The developed modules are expected in addition to developing logic skills as well as developing students' creativity abilities. Module oriented Mind map and equipped with game Guess the word will become more interesting and can develop student's interest and creativity. One of the stages in module development is the design phase or module design stage. The purpose of this research is to design the Mind Map-oriented Biology Learning Module and completed with game Guess the word in class VIII SMP. The method used is descriptive method. The result of this research is in the form of product design of Biology Learning Module which oriented to Mind map and completed with game Guess word for class VIII student of SMP.

Keywords: Design, Module, Mind map, Guess words

INTRODUCTION

Government Regulation number 19 of 2005 Article 20 indicates that teachers are expected to be able to develop learning materials, which is then affirmed through the Regulation of the Minister of National Education (Permendiknas) number 41 of 2007 on Process Standards, which among others regulates the planning of the learning process which requires for educators on Educational unit to develop a lesson plan (RPP). One of the elements in RPP is learning resources. Thus, teachers are expected to develop teaching materials as one source of learning.

According to the Association for Educational Communications and Technology (AECT), learning resources are all things or resources that teachers can use, either separately or in combination, for the purpose of teaching and learning with the aim of improving the effectiveness and efficiency of learning objectives. Problems that tend to be found in the field is not yet effective and efficient achievement of learning objectives. This can be seen from the low student learning outcomes.

One of the factors causing the low learning outcomes of students is the lack of interest of students to read the source of learning both before learning, during the learning process and to re-read the material that has been studied in school. So that when the test is held or test their difficulties in answering the questions given. While Farida (2008: 1) revealed that an effective learning process, among others, is done through reading.

Lack of reading interest in students can also be caused by less interesting learning resources that they will read. Organizing or packing the subject matter greatly affects the learning process to be held. The subject matter in the book needs to be processed again by the teacher so that it is easy to be understood by

the students. One form of processing of subject matter is the module.

The module according to Rayandra (2012: 155) is one form of print-based teaching materials designed to learn independently by participants of learners who are equipped with instructions for self-study. Sumiati and Asra (2011: 113) also revealed that the main purpose of module development is to improve the effectiveness and efficiency of learning in schools, because by using the module students can learn to the extent and can enable students to learn through reading, doing or doing activities or solve Problems with written learning materials. This module should be designed as attractive as possible so that it can provoke students' interest to read it.

Based on the results of interviews with Biology teachers at MTsN 1 Sijunjung, it was found that the Curriculum Change from SBC to the curriculum of 2013 caused a change in the subject matter so that it requires teachers to review the learning resources used and the Biology learning module for the 2013 curriculum as well No developed yet.

The current module is still using the curriculum in 2016 and generally still further develops the left-brain ability of students who are more developing student logic but still lacking in developing student creativity. Therefore it is necessary to develop a module that in addition to developing the ability of logic also develops students' creativity abilities.

Module oriented Mind map and equipped with game Guess the word will become more interesting and can develop student's interest and creativity. Because Mind map is one of the learning models that use graphic techniques that can provide ease in thinking and remembering. As expressed by Buzan. (2005: 4) that the Mind map is the easiest way to put information into the brain and retrieve information out of the brain, the Mind map is a creative, effective and literally way of mapping our thoughts. While Guess said is a learning model that provides terms that will be guessed to resemble a game that can provoke interest in student learning. Therefore it is necessary to design a learning module Biology oriented Mind map and equipped with game Guess the word in class VIII SMP.

The purpose of this research is to design the Mind Map oriented Biology Learning Module and completed with game Guess the word in class VIII SMP. The benefits of this research are as information about how steps are taken in designing a Biology oriented learning module Mind map and equipped with game Guess the word in class VIII SMP.

RESEARCH METHODS

This type of research is development research, with procedural model. The procedural model is a descriptive model that outlines the steps to be followed to produce a product. In this research, the product that is produced is a learning module Biology oriented Mind map and equipped with game Guess the word in class VIII SMP.

Before entering the design stage or module design first go through the define stage with the following steps.

2.1. Front End Analysis

Analysis of the front end is done to determine the basic problems in the development of modules to be performed. This analysis is based on interviews with Biology teachers and questionnaires for students of MTsN 1 Sijunjung. Based on the results of the analysis is known that the learning module Biology oriented Mind map and equipped with the game Guess words are needed by teachers and students to help achieve the achievement of learning goals in grade VIII SMP.

2.2. Student Analysis

Grade VIII junior high school students are in the age range 14-16 years. Based on his cognitive development, Muhammad (2009: 50-54) reveals that this age is at a formal operational stage, at this age the student is able to realize a whole in his work which is the result of logical thinking, the feelings and morale aspects have developed so as to support the settlement His duties. At this age, students also begin to be able to achieve logic and ratio and can use abstraction, can understand symbolic meaning and figurative.

At this age is also able to solve problems that are hypothetical.

If viewed from the development of creativity, Jean Peaget (Muhammad, 2009: 70) revealed that students who are in the formal operational stage is at a very potential stage for the development of creativity. Grade VIII students have been able to do a combination of actions proportionally based on logical thinking, doing combinations of objects proportionally based on logical thinking, already have understanding relative space and time, and able to master abstract language.

2.3. Task Analysis

Task analysis is a set of procedures for determining subject matter content. Task analysis is done by detailing the Core Competencies, Basic Competencies and Indicators to be used.

2.3.1. Core Competence. 1) Appreciate and live the religious teachings that he embraces 2) Demonstrate honest behavior, discipline, responsibility, care (tolerance, mutual assistance), courteous, confident, in interacting effectively with the social and natural environment within the reach of the association and its existence 3) Understanding and applying knowledge (factual, conceptual, and procedural) based on his curiosity about science, technology, art, culture related phenomena and eye-catching events 4) Processing, cheating, and reasoning in a concrete realm (using, parsing, composing, modifying, and making) and abstract realm (writing, reading, computing, drawing and composing) as learned in school and other similar sources in Point of view / theorist

2.3.2. Basic competencies. Analyze the linkages of plant tissue structure and function, as well as technology inspired by plant structure.

2.3.3. Indicator. 1)Mention the organs contained in plant body 2) Understand the function of each organ in plants 3) Understand the structure and function of each part of the organs in plants 4) Distinguish the structure on each monocotil plant organ with dicotil plant 5) Record technology that is inspired by the organ structure of plants.

2.3.4. Concept Analysis. Based on Basic Competence and Indicator, an analysis of material concepts will be developed into a module. The concepts of material to be composed include 1) Structure and function of plant roots; 2) Structure and function of plant stems; 3) Structure and function of plant leaves; 4) The structure and function of plant flowers; 5) Structure and function of fruit and plant seeds.

2.3.5. Analysis of Learning Objectives. Analysis of learning objectives is done by formulating learning objectives based on basic competencies and indicators that have been determined. Learning objectives are formulated for each learning activity as follows.

2.3.5.1 Learning Activity 1: Structure And Function Of Plant Roots

a. Understanding the root function
b. Distinguishing the morphological structure of monocotyl roots and dicotile roots
c. Understand the structure and function of each part of the root
d. Distinguish the anatomical structure of monocotyl roots and dicotile roots
e. Record technology that is inspired by the root structure of plants

2.3.5.2 Learning Activity 2: Structure and Function of Plant Trunks

a. Understand the function of the stem
b. Distinguishing the morphological structure of monocotyl stems and dicotile stems
c. Understand the structure and function of each part of the rod
d. Distinguish the anatomical structure of monocotyl stems and dicotile stems
e. Record technology that is inspired by plant stem structure

2.3.5.3 Learning Activity 3: The Structure and Function of Plant Leaves

a. Understand leaf function

b. Distinguishing the morphological structure of leaves of monocotil and dicotil leaves
c. Understand the structure and function of each part of the leaf
d. Distinguish the anatomical structure of the leaves of monocotil and leaves dicotil
e. Record technology that is inspired by the structure of plant leaves

2.3.5.4 Learning Activity 4: Structure And Function Of Flowers In Plants

a. Understand the function of interest
b. Distinguishing the morphological structure of monocotil flowers and dicotil flowers
c. Understand the structure and function of each part of the interest
d. Distinguish the anatomical structure of monocotil flowers and dicotile flowers
e. Record technology inspired by the plant flower structure

2.3.5.5 Learning Activity 5: Structure And Function Of Fruits And Seeds

a. Understand the functions of fruit and seeds
b. Distinguish the morphological structure of monocotil and dicotil fruits and seeds
c. Understand the structure and function of each part of the fruit and seed
d. Distinguish the anatomical structure of fruits and seeds monocotil and dicotil
e. Record technology inspired by fruit structure and tumbu seeds

After doing the define stage then proceed with the design phase or module design. At the design stage aims to design learning tools. The four steps to be taken at this stage are: (1) the compilation of the test standard (criterion-test construction), (2) the selection of media (media selection) in accordance with the material characteristics and learning objectives, (3) the selection of the format), Ie reviewing the existing teaching material formats and specifying the format of the instructional material to be developed, (4) making the initial design according to the chosen format (Thiagarajan, S., Semmel, D. S & Semmel, MI, 1974: 7).

RESULTS

At the design stage aims to design learning tools. In this study, the design of learning module based on the results of curriculum analysis, student analysis, task analysis, concept analysis, and objective learning analysis. The steps in performing module design are as follows:

3.1. Preparation of a benchmark reference (constructing criterion-referenced test)

At this stage the preparation of the test results of learning outcomes and test results of learning instruments based on the basic competencies, indicators and learning objectives. The test developed is tailored to the level of cognitive ability. Scoring of test results using an evaluation guide containing key and scoring guidelines for each item. In this research, the test is made of multiple choice questions and description questions.

3.2. Selection of media (media selection)

Media selection is done to determine the right media for presentation of learning materials. The process of selecting media is tailored to the results of task analysis and concept analysis and student characteristics. The media chosen in this research is print media that is Biology learning module as supporting in learning so that it can reach the learning goal.

3.3. Selection format (format selection)

The selection of formats in the development of this module is intended to select the format of the module to be used. The selected format is one that meets the criteria of attracting, facilitating and assisting in Biology learning. In order for developed module interesting, facilitate and assist in learning Biology hence in this research module dilengkapai with Mind map and game guess words. The module to be designed consists of several components, namely: 1) Identity module; 2) Module usage instructions; 3) Material description; 4) Student assignments / exercises (in the form of Mind map and Guess word); 5) Summary; 6) Formative test and 7) Key answers; 8) Assessment.

3.4. Initial design (initial design)

Initial design is the design of all learning devices that must be done before the test run. Initial drafts that have been done in this research are cover, user manual, competence, material description, student's task in the form of complete mind map activity and guessing game, key answer and assessment.

3.4.1.Cover

The cover of the cover consists of the module identity in the form of the title of the material that is the Structure and Function of Plant Body, the method or approach used is the Mind map oriented Module with Variation Guess the Word. The name of the author and accompanied by a material supporting image. The images on the cover are tailored to the contents of the module. Because this module discusses the material structure and function of plant body, it is shown picture structure from root, stem, leaf, flower, fruit and seed.

Figure 1: Cover the learning module

3.4.2 Instructions for use

The instruction manual contains instructional instructions using a module consisting of teacher instructions and student manuals. Given these guidelines, it is expected that teachers and students will be more able to use this learning module.

Figure 2: Study instructions

3.4.3. Competence

The competency page contains core competencies, basic competencies and learning indicators as a reference in learning by using this module.

Figure 3: Competencies in the module

3.4.4. Material Description

Figure 4: Description of the material

Before the description of the material, first outlined the learning objectives formulated based on basic competencies and indicators. Material descriptions are translated for each learning activity. The material description contains teaching materials in accordance with the learning objectives to be achieved. In the description of the material is also equipped with supporting pictures that can help students to better understand the material.

3.4.5. Student Assignment

In the student assignment section, the module invites students to map their thoughts through the mind-map complement of the material they have read in the material description section.

Figure 5: Completing the Mind folder.

In the module also comes with a word guess game, the student is asked to guess the matching word for the description or description given on the card / description box and write the answer on the card / blank box underneath it with the color of the description box equal to the answer box.

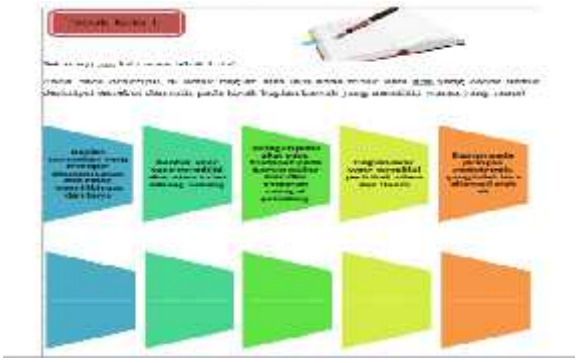

Figure 6: The word guess game

3.4.6. Answer key

The module also comes with a complete mind map or mind map and key answers from word guess games. This key is provided so that students can compare the answers with the answers in the key. So that students can measure their understanding of the material that has been studied.

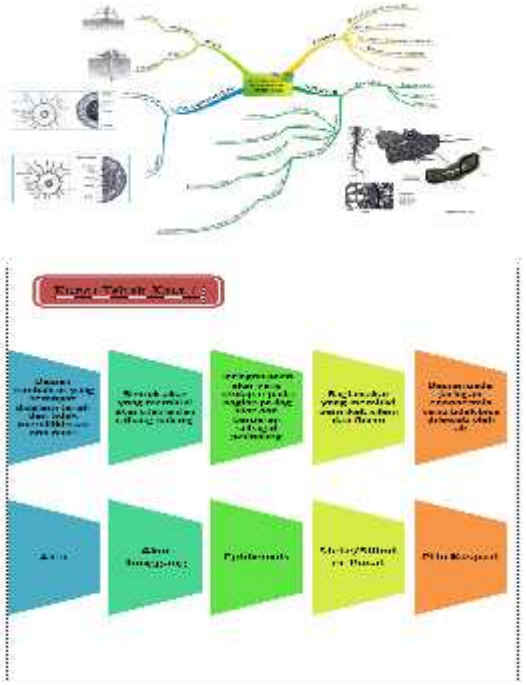

Figure 7: Lock the Mind folder and guess the word

3.4.7. Assessment

The assessment sheet is provided to determine the value of the student's score score. So that students know how far their

understanding of the material and including the category very good, good, enough or less.

Figure 8: Assessment

What has been described is only the initial design of the developed learning module. The design is still incomplete and still needs improvements and edits before continuing develop or development stage.

DISCUSSION

The design of learning module Biology oriented Mind map with variation Guess word for High School of class VIII done based on result of analysis which have been done at define stage. Based on the results of the analysis at the define stage in MTsN 1 Sijunjung, obtained data that schools, teachers and students of class VIII need a module as one type of teaching materials that can help the learning process in achieving learning objectives. The required module is a module that refers to the 2013 curriculum for Biology subject matter which has a wide range of material and materials that are considered difficult to understand based on interviews and obeservation results of student learning. Students also need modules that can attract reading, color and can facilitate students in understanding the subject matter.

Based on the analysis of the syllabus in the curriculum of 2013 it is established that the material to be designed module is the material structure and function of the plant body. After the formulation of indicators and learning objectives, then made the preparation of benchmark reference tests that begins with the preparation of a grid of test results learning. Based on the grid problem and then formulated the instrument about the test results of learning. Problems are made in the form of multiple choice of 10 pieces for each learning activity. The test developed is tailored to the level of cognitive ability. Scoring of test results is conducted using an evaluation guide containing the key and scoring guidelines for each item.

After the preparation of the reference test proceed with the selection of media. Media selection is conducted to optimize the development and use of modules in the learning process in the classroom. The developed module comes with a Mind map and Guess the word. Mind map in this module is used to assist students in mapping his mind and facilitate students in thinking and remembering. In the module also dilengkai with the game guess words as one form of the game that provoke the interest of students in evaluating the material that has been read.

The next step is to choose the format that will be used in developed modules. The format of the module to be developed is to use a single column format with a vertical paper form for material and horizontal descriptions for the mind map. Using a variety of letters and font sizes tailored to the needs and suitable to be read by students of SMP class VIII. The modules developed have several components including: 1) Identity Module; 2) Module Use Instructions; 3) Competence 4) Material Description; 5) Task / Student Training (in the form of Mind Map and Guess the Words); 6) Answer Key; 7) Assessment.

CONCLUSION

Based on the research results in the module design stage can be concluded that: The design of the module is done based on the

results of the analysis at the define stage or define stage. The design of the module begins with the preparation of benchmark reference tests, media selection, selection of new formats and then made the initial draft module. The module is designed composed of cover (module identity), module usage manual, competence, material description, student task / exercise (in the form of mind map and guessword), answer key, and assessment.

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