

The Making of Learning Module on the Subject Matter of Colloidal System Based on Guided Inquiry at 11th Grade of SMA

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Abstract - This study aims to develop a learning module of chemistry based of guided inquiry in colloidal system and reveal the validity, practicality, and effectiveness of chemistry learning module subject of guided inquiry-based colloidal system. The development model used in this research is adapting 4D model. This model consists of 4 development stages of Define, Design, Develop and Disseminate or adapted into 4D models, namely Define, Design, Development, and Disseminate. Procedure of development conducted in this research is stage of defining, designing and developing. Types of data collected in this study are validity, practicality and effectiveness using validation module learning sheet, observation sheet, questionnaire and learning result test. Based on the validation result by the four validators, it can be concluded that the moment of kappa based learning module is guided inquiry is 0.80 and categorized high validity, so it can be used by teacher to teach the colloid material in SMA. The level of practicability of guided inquiry based learning modules developed can be seen from the extent to which teachers and students can use the learning module during the learning process in the classroom. This learning module is tested on students, grade 11th's of SMAN 3 Painan, and has a reliability of 0.615. This research concludes that the chemistry learning module of the subject of colloid system based on guided inquiry is feasible to be used as a high school chemistry learning module

Keywords - Module, Guided Inquiry, Colloidal System.

I. INTRODUCTION

During the learning process right now, it was found four groups of problems faced by teachers to realize the implementation of curriculum of 2013, there are: 1) translation of basic competence into indicator, 2) elaboration of basic material in Basic Competence into description of subject matter in indicator, breadth and depth of matter. The minimum material means the lower limit, but the upper limit is not fixed so that the science teacher has difficulty in preparing the syllabus and lesson plan, 3) difficulties in implementing certain approaches, methods, or learning models in learning, due to the limited ability so that the process standard demands are difficult to be reached, 4)

difficulty in obtaining process-oriented textbooks in the form of specific modules such as inquiry, especially those written in Indonesian and in accordance with the National Curriculum, thus greatly affecting the achievement of the Content Standards and Process Standards.

Mulyasa (2007: 69) said learning is a complex process and involves various interrelated aspects. Learning process is important to reach the goal of education at school. Achievement of educational goals in schools demands improvement and refinement of the implementation of learning conducted in schools. One of them is through improving the learning process to a better direction. Improvement of this learning process can be toward the use

of learning methods, or refinement of learning modules. Currently many types of teaching materials that become an option for teachers in carrying out learning activities, one of which is a guided inquiry-based learning module. In guided inquiry-oriented learning modules, students are required to find concepts through the necessary instructions from a teacher. The guidelines are generally guiding questions. In addition to the questions, the teacher can also provide explanations as necessary when the student will conduct an experiment, such as an explanation of how to experiment. The series of activities requires a device that helps students find concepts and help teachers provide instruction to students. One such device is through guided inquiry based modules.

Mawardi (2016: 38) states inquiry learning places teachers not as learning resources, but rather as facilitators and motivators for student learning. The guided inquiry-based learning module is created by designing a learning module that activates students through guidance, direction and step by step designed by the teacher according to guided inquiry principle. This learning module is designed in such a way that with the direction of teacher students are guided to construct knowledge about the material studied in stages. Starting from the description above, the authors are interested to conduct research with the title of learning module development on the subject matter of solubility and solubility results and colloid-based system inkuiri guided class XI SMA.

Based on the formulation of the problem to be solved, the purpose of this research development is as follows. 1) Develop chemical learning module subject to solubility and solubility product and guided inquiry based colloid system, 2) to reveal the validity, practicality, and effectivity of chemistry learning module subject to solubility and solubility product and guided inquiry based colloid system.

II. METHOD

Based on the research objectives of developing and producing learning chemistry in the form of module with inquiry model inquiry of guided inquiry type which can be used in learning chemistry of class XI of Colloid material, the type of research used is development research. According Sugiyono (2007: 407) research development is the research used to produce a specific product and test the effectiveness of the product.

The development model used in this research is adapting 4D model. According Thiagarajan, et al in Trianto (2010: 93) This model consists of 4 development stages of Define,

Design, Develop and Disseminate or adapted into 4D models, namely Define, Design, Development, and Dessiminate. Procedure of development conducted in this research is stage of defining, designing and developing. Types of data collected in this study are validity, practicality and effectiveness using validation module learning sheet, observation sheet, questionnaire and learning result test.

III. RESULT AND DISCUSSION

The following is a brief analysis of the results of the feasibility assessment of guided inquiry-based learning module contents. The validity of guided inquiry-based learning modules is more emphasizing the validity of the content feasibility, construction feasibility, linguistic component and graffiti. The validity of the content of the content is valid by the validator because the guided inquiry based learning module developed has been in accordance with the taught material. The validity of the feasibility of construction is declared valid by the validator because the constructed learning guided inquiry-based learning module has fulfilled the requirements of preparing the presentation of the material based on the guided inquiry learning stages.

The presentation of the material based on guided inquiry presented in the module in terms of content feasibility has a very high category of validity. The validity generated based on the results of the assessment of the following validators, among others:

- a. Learning modules developed are in accordance with the contents of the material and the demands of the curriculum Competency Standards, Basic Competencies, and indicators to be achieved.
- b. The given model is in accordance with the material to be taught.
- c. The key questions provided have directed the students to the achievement of the indicators.
- d. The key questions provided in the learning module can help students find the concept.
- e. Exercises given can help students in consolidating the concept.

Meanwhile, in terms of the feasibility of the construction of the resulting module is systematic in accordance with the guided inquiry learning stages, because the module is a set of teaching materials that are presented systematically so that it can be used in teaching and learning activities (MoNE, 2008: 20). As the result, the validation scores of the feasibility of the construction of learning modules are 33.33%, 66.67%, 83.33% and 83.33% of statements validated by validators I, II, III and IV have high validity

and 66, 67%, 33.33%, 16.67% and 16.67% statements validated by validators I, II, III and IV have very high validity.

In terms of the accuracy of the use of language in the learning module has a category of high prevalence with a kappa moment of 0.80. As the result, validation scores of linguistic component of learning module are 20%, 60%, 80% and 80% statement validated by validator I, II, III and IV have high validity and 80%, 40%, 20% and 20% statements validated by validators I, II, III and IV have very high validity. As the result of clarity scores are, 25%, 25%, 100% and 100% statements validated by validators I, II, III and IV have high validity and 75%, 75%, 0% and 0% validated statements by validators I, II, III and IV have very high validity.

Based on the validation result by the four validators, it can be concluded that the moment of kappa based learning module is guided inquiry is 0.80 and categorized high validity, so it can be used by teacher to teach the colloid material in SMA. The level of practicability of guided inquiry based learning modules developed can be seen from the extent to which teachers and students can use the learning module during the learning process in the classroom. To find out whether the modules are made practically used or not, tested on the students of class XI in SMA Negeri 2 Painan.

As the implementation of learning in schools, the indicator whether this modul are feasible to use in learning process is the components of the learning module can be implemented by teachers in classroom learning. The module practice can be seen from the teacher's response questionnaire data and student response questionnaire processed by Kappa Cohen formula to obtain kappa value and see the module's practicability. The results of the questionnaire analysis of teacher response and student response questionnaire showed positive results, meaning that modules developed are practically used in the learning process and assist students in understanding the concepts being studied.

Based on the experimental results of the inquiry-driven module-based inquiry module showed that the module is practical with an average of 0.79. This indicates that the presence of guided inquiry-based modules for colloid material can facilitate teachers in the learning process. Guided inquiry-based modules can facilitate students to learn independently and can change the role of teachers who have been teaching as facilitators.

During this time most textbooks sold in the market there is no presentation of the material based on guided inquiry. The contents of textbooks sold on the market have presented most of the material, so students are not required to find concepts. According to Dahar (2011: 79) knowledge will be meaningful if the students are trying their own to find solutions. The use of this guided inquiry-based module gives students questions that lead, so students can find their own concepts.

The learning process with guided inquiry strategy allows students to construct their own knowledge enabling students to have better retention, as Hamalik (2009: 89) points out, "learning is a process, an activity and not a result or a goal. Learning is not just remembering, but more broadly than that, that is experiencing".

In addition to using a questionnaire of practicality for teachers the practicality of the guided inquiry learning-based module also uses a student response questionnaire. Based on Table 7 we get the value of kappa moment of student response questionnaire of 0.8. This indicates that the instructional module based on inquiry is guided by practical to be used in learning or in other words easy and can be used in learning and can help improve student activity in learning process, according to opinion Suryosubroto (1983: 11) the main principle of teaching module is to increase efficiency and effectiveness of teaching and learning because it is usually a lot of time that students use to listen and record, so less time is used for learning activeness.

IV. CONCLUSION

This research concludes that the chemistry learning module of the subject of colloid system based on guided inquiry is feasible to be used as a high school chemistry learning module

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