

Validity of the Al-Qur'an Integrated Guided Inquiry Module on the Hydrocarbon Topic for 11th-Grade Students at Madrasah Aliyah (MA)

Wulandary Windy D¹, Iryani^{1*}

¹ Chemistry Education, Universitas Negeri Padang, Jl. Prof. Dr. Hamka, Air Tawar Barat, North Padang, West Sumatra, Indonesia. 25171.

* iryaniachmad62@gmail.com

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ABSTRACT

This research aimed to describe the validity of Al-Qur'an integrated guided inquiry module on hydrocarbon topic for 11th grade of Madrasah Aliyah (MA). The developed module fulfilled Local Regulation of West Sumatera Number 2 Year of 2019 and in accordance with Core Competence I of Curriculum 2013. This research used Plomp development consisting of three stages namely, preliminary research, prototyping stage, and assessment. However, this research was limited in the stage of module validation namely in the stage of forming prototype. The research instrument used to test this validity was in the form of questionnaire for teachers and lecturers. Data were analyzed using Aiken's V formula. The analysis result showed average value 0,89 and the module was categorized into valid.

KEYWORDS

Hydrocarbon, Development, Guided Inquiry, Module, The Quran Integrated



1. INTRODUCTION

The 2013 curriculum emphasizes *student-centered* learning^[1]. The learning process of the 2013 curriculum recognizes the term learning model. The guided inquiry model is one of the learning models by the 2013 curriculum guidelines. The guided inquiry model emphasizes learners think critically to solve problems on their own^[2]. In addition, the guided inquiry model also affects the improvement of understanding and attitude of the spirit of students in finding learning concepts^[3]. Five stages of the guided inquiry model, including orientation, exploration, concept formation, application, and closing^[4]. This guided inquiry model can be applied to teaching materials in the form of modules.

The module is a place for learning that is composed of structured and interesting materials, methods, and methods of evaluation to achieve the desired competencies^{[5][6]}. Module development has been carried out by Azra and Fajriah (2021) who stated that the development of guided inquiry-based hydrocarbon modules can increase student achievement in learning^[7]. However, the modules developed have not been integrated with Qur'anic values by West Sumatra Provincial Regional Regulation Number 2 of 2019 in Chapter V articles 88, 89, and 90 which explains the need for a local content curriculum as study material that is integrated into relevant subjects, namely Qur'an education and character education, especially Madrasah Aliyah^[8].

The results of interviews conducted with teachers and the distribution of questionnaires to students at MAN 3 Padang and MAN 2 Padang Panjang found that the teaching materials used were not in the form of guided inquiry-based modules nor did they meet the 2013 curriculum standards. Hydrocarbon teaching materials for the two schools have not been integrated with the Qur'an, and the results of the student questionnaire showed that 56% of students had difficulty with hydrocarbon materials. The results of the interview and the dissemination of the questionnaire showed that no integrated teaching material of the Qur'an could support students in finding concepts independently.

Research on guided inquiry-based modules on valid and effective chemistry to improve student learning outcomes^{[9][10]}. Then research on the integrated module of the Qur'an has also been developed and shows that the developed module is valid^{[11][12]}. However, Qur'an-integrated guided inquiry-based modules are not yet available. From some of these studies, the author has conducted research on the development of hydrocarbon modules based on guided inquiry integrated with the Qur'an. Learning that is integrated with the Qur'an can increase moral values and help students understand Islamic religious values. This can provide an understanding to students that knowledge also comes from the Qur'an. This module also provides key questions that are different from previously developed modules.

2. METHOD

This type of research uses *Education Design Research* developed by Plomp. Product trials were carried out at MAN 1 Padang and FMIPA UNP 2022. The research subjects were two UNP chemistry lecturers, three MAN 1 Padang chemistry teachers, and students of class XI MIPA MAN 1 Padang City.

This research applies the Plomp development model. There are three stages in the Plomp model, namely *preliminary research*, *prototyping stage*, and *assessment phase*^{[13][14][15][16]}. This research is carried out until the

validity test and the resulting module is valid on prototype III. The research procedure can be described as follows.

2.1 Preliminary Research

1) Needs analysis, namely, the identification of problems that exist in teachers and students in hydrocarbon chemistry learning activities begins with interviewing chemistry teachers, then distributing questionnaires for grade XI students of MAN 3 Padang and MAN 2 Padang Panjang. 2) Context analysis, aimed at identifying, detailing, or exploring problems. 3) Literature review, aims to find references that have a relationship with the learning process and find solutions to problems encountered in the needs analysis. 4) Development of a conceptual framework, namely the analysis of some of the key concepts contained in the modules developed^[17].

2.2 Prototyping stage

1) Prototype I, aims to compile and formulate module components. 2) Prototype II, which is carrying out *self-evaluation* with a *checklist* system that aims to find out the advantages and disadvantages of the module. Prototype II was produced after revision. 3) Prototype III, The next stage is expert assessment and one-on-one evaluation. This expert assessment stage will be carried out by providing value and advice on the product, the assessment is carried out by validators. These results will be analyzed and revised to create a valid module on prototype III^[18].

This research was conducted by providing a validation questionnaire to check the validity of the module. The module validation questionnaire includes questions related to content validity, construct, presentation, language, and Islamic integration. Test validity using Aiken's V ^{[19][20]} analysis method. *Aiken's V* assessment has the following formula. (equation 1 and equation 2). Where the symbol I_o = minimum value for the category; c = number of selected categories; r = value of validators; and n = number of validators

$$V = \frac{\sum s}{n(c-1)} \dots \text{Equation 1}$$

$$s = r - I_o \dots \text{Equation 2}$$

3. RESULT AND DISCUSSION

3.1. Definition of Content

3.1.1 Needs Analysis

The results obtained from the needs analysis, namely: (1) hydrocarbon material is factual and conceptual, so students still experience difficulties in understanding the material; (2) the available teaching materials are not based on guided inquiry so students find it difficult to understand and find concepts independently and have not met the requirements of the 2013 curriculum; (3) the available teaching materials have not been integrated with the Qur'an on hydrocarbon materials so that they are not by West Sumatra Province Regional Regulation Number 2 of 2019, especially Madrasah Aliyah.

3.1.2 Context Analysis

This stage is carried out by analyzing the syllabus and curriculum. The Basic Competency Setting (KD) for KD 3.1 analyzes the structure and properties of hydrocarbon compounds based on the peculiarities of carbon atoms and the classification of their compounds.

Competency achievement indicators (GPAs) are derived from KD and learning objectives are derived from GPA. The core material described in the module can be determined using GPA.

3.1.3 Literature Study

The literature study conducted found that the integrated module of the Qur'an provides solutions to current learning problems. Research by M. Tania (2022) shows that learning using modules is effectively used as independent teaching material on oxidation-reduction reaction materials. Furthermore, research conducted by Azra and Fajriah (2021) showed that learning using modules can improve student learning outcomes on hydrocarbon materials^[7]. However, there are no integrated teaching materials for the Qur'an. The hydrocarbon module developed in this study is integrated with the Qur'an, and there are key questions that are different from the modules developed previously.

3.1.4 Conceptual Framework Development

The conceptual analysis applied, there are several important concepts in hydrocarbon materials, including the peculiarities of carbon atoms, classification of hydrocarbon compounds, general structure and nomenclature of hydrocarbon compounds, and physical and chemical properties of hydrocarbon compounds.

3.2 Prototyping Stage

3.2.1 Prototype Formation I

At this stage, the module is prepared by utilizing the features in the Microsoft Office Word application to

create an attractive module. Module design follows the guided inquiry stage^[21]. Developed module design:

3.2.1.2 Orientation

There are several points in orientation, namely GPA, motivation, and supporting materials. The integration of the Qur'an is found in the motivation section of the module.

3.2.1.2.1 Exploration and Concept Formation

The model presented in the module can provide information and exploration so that students can formulate concepts on hydrocarbon material through key questions, to achieve learning objectives.

3.2.1.3 Applications

The application stage is the stage of giving exercises and questions. Practice provides an opportunity to increase the confidence of the learners.

3.2.1.4 Concluding

The concluding part of the learner concludes and measures the results of his work. One of the stages in the guided inquiry module can be seen in **Error! Reference source not found.**

In addition, the application of guided inquiry in handouts requires students to be more active in digging deeper into the material and being able to solve problems^[22].

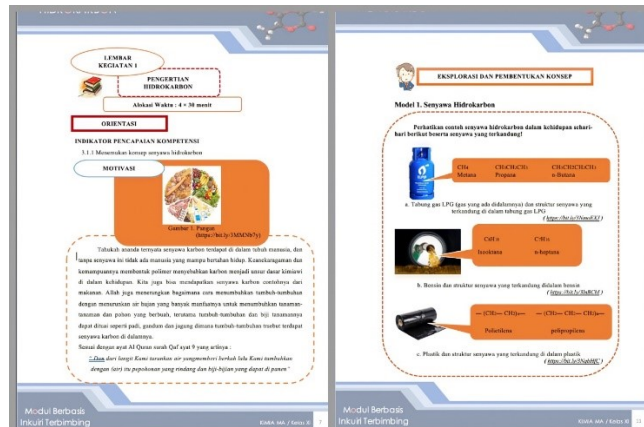


Figure 1. Orientation Stages and Exploration Stages

3.2.2 Prototype Formation II

From the self-evaluation obtained, it is necessary to improve the model and key questions in the exploration section, as well as correct typos in the module.

3.2.3 Prototype Formation III

Formative evaluation in the form of expert judgment and one-on-one evaluation applied to prototype II. Expert judgment is carried out to test the validity of the module tested by the validator. The components of the validation assessment used are based

on the components of the Ministry of National Education (2008)^[16]. There is the addition of Islamic integration in the module. The validity test instrument used is a validation questionnaire.

The one-on-one evaluation was carried out on three class XI MIPA students with different abilities, namely low, medium, and high abilities by interviewing these students. The results of this evaluation show students' interest in the module being developed and help students improve their understanding of hydrocarbons. The results of data analysis with a validation questionnaire on the module validity test can be seen in **Figure 1**. The description of the value on the validity test is shown in **Error! Reference source not found.**

Based on the picture and table above, the feasibility of the content in the module gets a value of V 0.89, this shows that the module being developed is feasible and follows the theory and curriculum of 2013^[15]. The presentation component gets 0.89. This shows that the modules are developed according to the module guidelines and are arranged systematically. The language component gets 0.87. This shows that the developed module is easy to understand and per EBI. The graphical component gets 0.9. This shows that the developed module design is presented attractively and clearly. Finally, Islamic integration module 0.88. This shows that the developed module has paragraphs that are by the hydrocarbon material.

The results above prove that the value of V in each aspect is greater than 0.80. Each aspect of the assessment has an average of V 0.87. According to Aiken, a module is considered valid if the value of V is 0.80 or higher and the validity level is 96%, so based on the data above, the developed module is valid.^[23]

Based on the assessment results from the validator, show that the graphic component has a very high validity value due to the attractive module design and orderly layout. Likewise aspects of the feasibility of content components and presentation components following guided inquiry syntax and arranged interestingly. However, in the linguistic aspect, the results were low, namely 0.87, because there were typing errors in the module such as compound nomenclature errors. However, the error has been corrected according to the validator's suggestion.

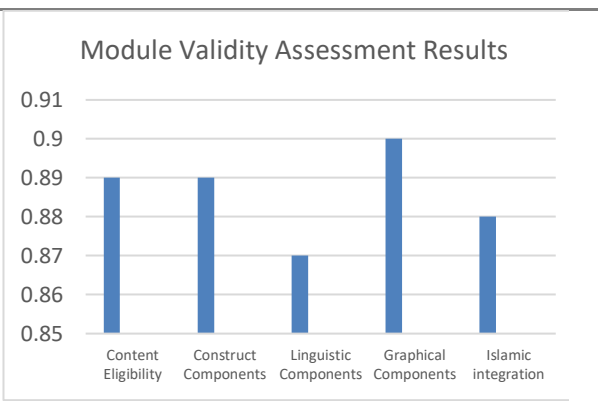


Figure 1. Graph of Hydrocarbon Module Validity Test Results

Table 1. Module Validity Test Results

Rated aspect	Aiken's V	Information
Content Eligibility Components	0,89	Valid
Presentation Components	0,89	Valid
Content Eligibility Components	0,87	Valid
Linguistic Components	0,9	Valid
Islamic integration in the module	0,88	Valid
Rate	0,89	Valid

When carrying out validity tests with experts, there are several suggestions given by the validator. These suggestions became a reference in revising the hydrocarbon module so that prototype III was obtained in the form of a valid hydrocarbon module.

4. CONCLUSION

The results of the research that has been carried out show that the Al-Qur'an integrated guided inquiry-based hydrocarbon module is valid for all aspects of the assessment with an average value of V of 0.89.

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