



The Effectiveness of the Senior High School Learning Modules with an Integrated Guided Inquiry Approach

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Abstract. Modules are printed instructional materials designed for independent student study. This research aims to develop a valid, practical, and efficient chemistry learning module based on guided inquiry. The instruments used to collect research data are a questionnaire for two validators, a questionnaire for teacher responses and students' responses to the developed module, a learning outcomes test, and a character assessment. The data collected is used to create and test the module. The module developed was tested at Senior High School in Wajo Regency. The study results show that the learning module is in the correct category, with an average validity of 3.50. Based on the validity of the module, the module was tested in small groups at the research location. The results of its implementation show that the module is practical because the average of teacher and students' responses reach 80.00%, which is in the practical category. It is adequate because 86.67% of the students achieved minimum completeness scores, and their character values reached 81.00% with a very effective category. Based on the study's results, the chemistry learning module based on guided inquiry integrated with Pancasila character values is valid, practical, and effective.

Keywords: Scientific Thinking · Creative Thinking · Pancasila Character · Character Education

1 Introduction

Education is a series of teaching and learning processes in which there is a direct interaction between educators and students; thus, it cannot be denied that the success of education cannot be separated from the behavior of educators and student behavior. Thus, educators and students have a strategic position in improving the quality of learning [1–3]. National education, according to Law Number 20 of 2003, aims to develop capabilities and shape the character and civilization of a dignified nation in the context of educating the nation's life, to develop the potential of students to become human beings who believe and fear God Almighty, have a noble character, are healthy, knowledgeable, capable, creative, independent, and democratic and responsible citizens.

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A. A. Patak and A. H. Hasim (Eds.): W-SHARE 2022, ASSEHR 762, pp. 166–174, 2023.

https://doi.org/10.2991/978-2-38476-084-8_23

Character education aims to develop and equip the next generation with good character, high literacy skills, and superior 21st-century competencies, such as thinking critically, analytically, creatively, communicatively, and collaboratively. The central character values that are the focus of the policy of strengthening character education are religiosity, nationalism, independence, cooperation, and integrity.

Character education is a human activity with an educational action aimed at students. According to Wynne [4], character education focuses on applying good values in everyday behavior. Character education is a conscious and planned effort to create an atmosphere and process of empowering potential and cultivating students to build unique personal and group character as citizens. It was confirmed in presidential regulation Number 87 of 2017 concerning character education programs.

To compile or write teaching materials in the form of modules, teachers must be creative in designing learning innovations to be attractive to their students in learning activities to achieve learning objectives. As a fun learning experience, in innovative learning, students actively explore the material being studied using creative thinking processes. The module is a type of instructional material that is entirely and methodically packaged. It is a collection of learning experiences planned and designed to assist students in mastering specific learning objectives.

In this study, the chemistry learning module was integrated with character values as elements of the Pancasila student profile, including critical, independent, cooperation, and independent reasoning, and the subject matter was designed as attractive as possible, with animated pictures related to the subject matter so that students were more interested in learning. By following the steps of using this module, students can increase the value of critical, independent, cooperative, and independent character in themselves. Besides that, students can also learn independently with these learning media.

The inquiry-based learning module is a technique in learning situations that allows students to learn by taking on the role of a scientist because the inquiry is part of the scientific process. Inquiry-based learning is the process of gathering and acquiring information through observation and experimentation to find answers or solutions to questions or problem formulations by employing critical and logical thinking skills. The inquiry learning strategy is a series of learning activities that emphasize the process of critical and analytical thinking to seek and discover the solution to a questionable problem.

In line with the above efforts, based on observations in the field, a few teachers have tried to increase the active role of students in learning by using innovative learning models, one of which is the guided inquiry learning model. However, the use of guided inquiry learning models by teachers in the field has not been supported by the proper learning tools (Learning Implementation Plans, Modules, Student Performance Sheets, subject matter texts, and competency achievement instruments). All are consistent with the guided and aligned inquiry learning model.

The research aims to determine the process of developing a guided inquiry-based chemistry module integrated with Pancasila character values, knowing the validity, practicality, and effectiveness of the results of developing a guided inquiry-based chemistry module integrated with Pancasila character values. The benefit of this research is as a space for independent learning and improves the skills and competencies of students.

With guided inquiry-based chemistry modules integrated, the values of Pancasila characters can foster scientific thinking through creative thinking processes and improve learning outcomes and students' character.

2 Method

2.1 Research Approach

The research stages refer to Thiagarajan's 4D research and development method [5], which consists of 4 stages: Define, Design, Develop, and Disseminate.

Define: The requirements for developing the learning media are determined and specified in the define stage. This includes identifying the goals and objectives of the learning media, the target audience, and any specific learning outcomes that need to be achieved.

Design: Once the requirements have been defined, the design stage begins. This stage involves creating the initial design for the learning media, which may include visual and graphic elements and instructional and educational content. The design should be based on the requirements identified in the previous stage, focusing on creating an engaging and effective product for the target audience.

Development: In the development stage, the design is refined and developed into a final product that meets valid, practical, and effective criteria. This stage involves extensive testing and evaluation to ensure the learning media is effective, efficient, and engaging for the intended audience. The development stage may also involve feedback from early users to refine and improve the product.

Disseminate: Once the learning media has been developed, it is distributed in limited quantities to teachers and other educators for feedback and evaluation. This dissemination process allows for further refinement of the learning media based on feedback from actual users.

2.2 Data Collection

The data analysis technique used in developing the learning module is to evaluate the validity, effectiveness, and practicality of the media that has been developed. The assessment is carried out by analyzing the data obtained through an assessment instrument in the form of a quantitative questionnaire.

2.3 Data Analysis

There are three types of research data analysis activities, namely (a) validity analysis, (b) practicality analysis, and (c) effectiveness analysis. The product validity category can be seen in Table 1. While the response category (practicality) to the product can be seen in Table 2. A product is said to be effective in Table 3 if 80% of the students who use the teaching materials can reach the KKM (Minimum Completeness Criteria) [6].

Table 1. Product Validity

Scores Interval	Category
$3.5 \leq Va \leq 4.0$	Very Valid
$2.5 \leq Va \leq 3.5$	Valid
$1.5 \leq Va \leq 2.5$	Less valid
$Va < 1.5$	Invalid

Table 2. Product Practicality

Scores interval	Category
$80\% < P \leq 100\%$	Very Practical
$60\% < P \leq 80\%$	Practical
$40\% < P \leq 60\%$	Quite Practical
$20\% < P \leq 40\%$	Less Practical
$0\% < P \leq 20\%$	Very Less Practical

Table 3. Product Effectiveness

Score interval	Category
$80\% < E \leq 100\%$	Very Effective
$60\% < E \leq 80\%$	Effective
$40\% < E \leq 60\%$	Quite Effective
$20\% < E \leq 40\%$	Less Effective
$0\% < E \leq 20\%$	Very Less Effective

3 Results and Discussion

Data on the validity, practicality, and effectiveness of the integrated guided inquiry-based chemical module on the value of the Pancasila.

3.1 Module Validity

Based on Table 4, the results of the material validity analysis from the validator with an average score of 3.5 are in the very valid category, and the media validity analysis with a score of 3.4 is in a suitable category. The average material and media validity result of 3.5 is very valid, so the guided inquiry-based chemistry learning module integrated with the Pancasila character values is declared valid.

The results of this study are supported by Sopacua et al. [7], which state that a quality learning module is suitable for use if it meets the validity standards assessed

Table 4. Validation Results of Learning Media Module

Aspect		Average Score	Description
Content	Appropriateness	3.5	Very Valid
	Language	3.6	Very Valid
	Serving	3.4	Valid
	Appearance	3.4	Valid
Average		3.5	Very Valid
Media	Module benefits	3.5	Very Valid
	Module design	3.3	Valid
	Module usage	3.5	Very Valid
Average		3.4	Valid

by experts. The validation results from the validator show that the components of the learning module in the form of lesson content and media as a whole are declared valid with minor revisions [8, 9]. Therefore, a slight revision is made in this module based on input or suggestions from the validator before this module is used or tested. In this study, validation of learning support devices such as Learning Implementation Plans and assessment instruments was also carried out. The validation results show that the lesson plans and assessment instruments meet the valid criteria.

3.2 Module Practicality

Table 5 shows the teacher's response with an average score of 3.3 (81.25%) with an efficient category.

Table 6 shows student responses with an average score of 3.2 (80.00%) with a category practical. The average response of teachers and students 3.2 is in the Practical category, so the guided inquiry-based chemistry learning module integrated with Pancasila character values is declared practical.

The results of this study are supported by the statement of Dwijayani [10], which states that a learning device is declared practical if the observations show the teacher's

Table 5. Practical Test of Teacher Responses

Aspect	Score	%	Category
Ease of use	3.50	87.5	Very Practical
Presentation of material	3.50	87.5	Very Practical
Appearance	3.00	75.0	Practical
Benefits	3.00	75.0	Practical
Average	3.30	81.25	Very Practical

Table 6. Practical Test of Student Responses

Aspect	Score	%	Category
Language	3.30	79.5	Very Practical
Presentation of material	3.20	81.5	Practical
Appearance	3.30	81.5	Very Practical
Benefits	3.10	77.5	Practical
Average	3.20	80.00	Practical

response, as well as the student's responses to the device, is in the category of positive or very positive response. Furthermore, Hasibuan et al. [11] state that a learning development product is said to be practical if the product is easy to use or practical.

3.3 Module Effectiveness

Based on Tables 7 and 8, it can be seen that the score of student learning outcomes obtained by four people, or 13.33% of students, declared incomplete, and 26 people, or 86.67% of students, declared complete individually with the understanding that these students have been able to complete, master the competence, or achieve learning objectives.

Another data used to test the effectiveness of the developed module is the student's character value after using the module, which is expected to increase in the learning process.

The data on student character scores before and after using the developed module can be seen in Table 9, showing that the average critical reasoning character score is 3.10 or 76.00% in the practical category. Independent character has an average score of 3.30 or 82.50% in the efficient category, creative characters with an average score of 3.20 or

Table 7. Descriptive Analysis of Student Learning Outcomes

Variable	Statistical Value
Research Subject	30 peoples
Students taking exams	30 peoples
Students who do not take the exam	0 people
Completed student	26 peoples
Unfinished students	4 peoples
Minimum score	66.67
Maximum score	100
Ideal score	100
Average	88.00

Table 8. Completeness Analysis of Student Learning Outcomes

Range	Category	Freq.	Percentage (%)
0–74	Not Complete	4.00	13.33
75–100	Complete	26.00	86.67
	Total	30.00	100

Table 9. Data Analysis of Students' Average Character

No.	Character	After Using The Module		Before Using The Module	
		%	Categories	%	Categories
1	Critical Reasoning	76.00	Effective	70.83	Effective
2	Independent	82.50	Very Effective	70.00	Effective
3	Creative	80.00	Effective	62.50	Effective
4	Mutual Cooperation	85.00	Very Effective	72.50	Effective
	Average	81.00	Very Effective	68.96	Effective

80.00% in the practical category, and cooperation characters with an average score of 3.40 or 85.00% in the convenient category. The average of all character values obtained a 3.2 or 81.00% score with a very effective category.

Based on the data of student learning mastery, which reached 86.67% and the student character value of 81.00% in the very effective category, the guided inquiry-based chemistry learning module integrated the Pancasila character value was declared effective. The results of research by Setiawati [12] support this study report that learning media in the form of modules are effectively used in learning with the achievement of classical mastery of 83% of class X students of senior high school Pontianak on Animalia material. Furthermore, using teaching materials that integrate character values is effectively applied to increase knowledge and grow the character values of students [13, 14]. Developing teaching materials in thematic modules based on character values and higher-order thinking skills is beneficial and effective in learning [15, 16]. Therefore, this guided inquiry-based chemical module product that integrates the values of the Pancasila character can also be used in secondary schools as one of the teaching materials that can foster the Pancasila character values for students. The value of the Pancasila character in question from the results of this study is critical reasoning, creativity, independence, and cooperation.

4 Conclusion

Based on the research and development results of guided inquiry-based learning media, the integrated value of the Pancasila character for class XI students at Senior High School in Wajo Regency can be concluded as follows. The process of developing guided

inquiry-based learning media modules integrated with Pancasila character values for class XI Senior High School in Wajo Regency was developed with a 4D model: Define, Design, Develop, and Disseminate. The guided inquiry-based learning media module integrated the value of the Pancasila character for class XI Senior High School in Wajo Regency has met the criteria of validity based on the validation results from the validator, practicality based on the results of practicality questionnaires by teachers and students, and effectiveness based on the results of student learning tests. The value of the Pancasila character in this study is critical reasoning, creativity, independence, and mutual cooperation.

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