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Validation of the MORISE Learning Model on the Topic of Global Warming to Enhance Science Literacy and Learning Outcomes

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ABSTRACT
This study aims to examine the validity of the MORISE learning model. The research design used follows the Education Research and Development method, which involves the development of the model starting from designing the model to implementing it. The validity test of the MORISE model is conducted by two science education faculty members from the Postgraduate Program at UNEJ as expert validators, and one user validator, with the purpose of obtaining feedback and improvements for the learning model developed by the researcher. The first expert validator gave a score of 93%, the second expert validator gave a score of 84%, and the user validator gave a score of 95%. The average result of the final validation is 91%, falling within the highly valid criteria (>81.25%), thus indicating that the MORISE learning model can be used without revisions.

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1. INTRODUCTION

The rapid development of the world and the swift global changes in various aspects of life pose challenges to the nation in preparing the future generation, including students (Anwar, 2018). Education is a crucial aspect, as in the 21st century, competition is growing intense, necessitating individuals to possess high-quality skills in various fields (Erlinawati, 2019). The education system in Indonesia requires various innovations to enhance the capabilities of learners and support their development into lifelong, active, and independent learners (Samudra, 2019).

Education is not only aimed at developing knowledge based on core subjects, but also should be oriented towards equipping students with creative, critical, and communicative abilities, as well as fostering their character (Andayani, 2019). The 2013 curriculum demands that teachers change their teaching practices. Learning, which used to be teacher-centered, must shift its focus to becoming learner-centered. According to Ministry of Education and Culture Regulation No. 22 of 2016, the learning process should be conducted interactively, inspiringly, enjoyable, challenging, and motivating for students to actively participate while providing space for developing students' creativity.

Developing a learning model tailored to 21st-century education is crucial to provide a learning experience for students. The chosen model should also enhance students' engagement in the learning process (Handayani and Wulandari, 2021). The recommended teaching models by the government in the 2013 curriculum include the scientific approach, inquiry-based learning (IBL), problem-based learning (PBL), and project-based learning (PjBL). These teaching models are believed to prepare each student to face challenges in the future. The problem-based learning (PBL) and inquiry-based learning (IBL) models develop a constructivist paradigm that enables students to construct their own knowledge. Teaching strategies based on constructivism should focus on providing students with physical experiences that trigger cognitive conflict and encourage them to develop new knowledge schemas (Nasar, 2020).

In preparing the golden generation, teachers are expected to be capable of implementing teaching models or strategies that empower 21st-century skills (Mahanal, 2014). The learning process requires teaching models to assist teachers in creating structured classroom situations. Teaching models can take the form of a conceptual framework that outlines systematic steps in organizing learning experiences to achieve specific learning

objectives, serving as a guide for instructional designers and teachers in designing and implementing lessons (Septiani, 2019). A teaching model is a systematically arranged instructional plan that forms a pattern used as a guideline in planning classroom teaching (Trianto, 2012).

A teaching model is a conceptual framework that outlines systematic procedures in organizing learning experiences to achieve specific learning objectives, and serves as a guide for instructional designers and educators in planning teaching activities (Rahmayani, 2019). The variety of teaching models keeps students consistently engaged with the teacher, motivated, and dedicated to participating in lessons (Pertiwi, 2020). Teaching models can be chosen as patterns, meaning teachers are allowed to select suitable and efficient teaching models to achieve educational goals (Rusman, 2018).

The MORISE learning model is a development of the inquiry-based learning model with a group investigation approach aimed at enhancing students' science literacy skills and learning outcomes. According to Joyce et al. (2004), as cited by Sutarto (2015), it is proposed that a developed learning model should not only have goals and assumptions but also possess five characteristic elements of a model, namely syntactic, social system, reaction principle, support system, instructional impact, and accompanying impact. The first characteristic element of the learning model is syntactic. The MORISE learning model has clear learning steps, consisting of six stages: motivation, orientation, reading, investigation, sharing, and evaluation.

2. RESEARCH METHOD

The research conducted by the researcher employs the Research and Development (R&D) approach. Development research is a process or series of steps to create a new product or enhance existing products, rendering them accountable and justifiable (Winarni, 2018). Validation is used as one of the measures of the feasibility of the developed model for it to be implemented further (Prayogi et al, 2018). The validation of the MORISE learning model aims to determine the product's suitability for testing in the instructional process, encompassing the development product needs, supporting theories, instructional model structure, media and learning resource selection, and linguistic appropriateness.

The validity of the learning model is obtained from the results of logical validation tests by expert validators. A learning model is deemed valid if the validation results conducted by three validators, consisting of two expert validators and one user validator, meet the minimum criterion of 70% or fall into the valid category. The data analysis technique for validating the MORISE learning model handbook employs the percentage data analysis technique using the formula:

$$\boldsymbol{V = \frac{TSE}{TSM}\ X\ 100\%}$$

Explanation:
V : Validity
TSE : Total empirical score
TSM : Total maximum score
(Akbar, 2015)

The obtained Validity Percentage is then converted using the assessment categories that refer to the validity criteria as shown in the following Table 1.1.

Table 1.1 Validity Assessment Category

No	Percentage (%)	Category	Description
1	$81{,}25 < X \leq 100$	Very valid	The product is ready to be used in the field for learning activities
2	$62{,}5 < X \leq 81{,}25$	Valid	Products can be continued by adding something that is lacking, the additions are made not too big and not basic
3	$43{,}75 \leq X < 62{,}5$	Less valid	The product was revised again with careful attention and re-examination
4	$25{,}00 \leq X < 43{,}75$	Invalid	Products must be revised as a whole and fundamentally about the contents of the product

(Akbar, 2015)

According to Buhaerah (2013), a learning model is considered effective if it can produce results as expected, which means an improvement in learning outcomes. The effectiveness of the MORISE learning model can be seen from the results of students' scientific literacy skills and learning outcomes. Cognitive learning outcomes were measured using research instruments in the form of pre-tests and post-tests, analyzed using N-

Gain. The N-Gain value indicates that the MORISE learning model has an impact on students' cognitive learning outcomes.

3. RESULT AND DISCUSSION

The validation of the learning model is carried out with the aim of obtaining feedback and improvements for the developed learning model. The validation of the MORISE model is conducted by three expert validators, comprising two expert validators who are faculty members at FKIP University of Jember, and one user validator, a teacher at SMPN 4 Jember. The validation of the product validation instruments is initially done to determine whether the product validation instruments are suitable for assessing or validating the learning model.
The results of the validation of the learning model validation instruments can be seen in the table below. Expert validators

Table 3.1 Validation of the MORISE Learning Model Instrument Assessment for Learning Model Validation Sheet

No.	Items	Expert validators (1)	Expert validators (2)	Expert validators (3)
1	Instructions for use of the instrument are clearly stated	4	4	4
2	Based on the development aspect, the instrument can reveal the theory or basis for the development of a model	4	3	3
3	Based on the content aspect, the instrument can reveal the structure of the developed model	3	4	4
4	Based on the Language aspect, the instrument uses clear and unambiguous language (double meaning)	4	4	4
5	Instrument sheets provide space for validators to provide feedback or revisions	4	4	4
Total Number of Scores		19	19	19
Validation Results		95%	95%	95%
Average Validation Results			95%	

Table 3.1 presents the validation results conducted by the first expert validator, which amounted to 95%. This indicates that the validation instrument for the MORISE learning model is highly suitable for use without revisions, as the validation score is >85%. The validation instrument for the MORISE learning model is subsequently employed to validate the product, and the validation results can be observed in the table below.

Table 3.2 MORISE learning model validation results

No.	Assessed Aspects	Expert validators (1)	Expert validators (2)	Expert validators (3)
I.	Product Development Needs (Learning model)			
1.	Collaboration skills are possessed by students	3	4	4
2.	Science literacy skills are needed by students to face the 4.0 era	4	4	3
II	Supporting Theories			
3.	The background to the development of the model is clearly stated	4	4	4
4.	The purpose of model development is clearly stated	3	4	4
5.	The description of the model is clearly stated	2	3	4
6.	The theory underlying the development of the model is clearly stated	3	3	4
III.	Learning Model Structure			
7	The learning steps (syntactic) are clearly stated	4	3	4

No.	Assessed Aspects	Expert validators (1)	Expert validators (2)	Expert validators (3)
8.	The social system in learning is clearly stated	3	4	4
9.	The principles of reaction in learning are clearly stated	4	3	4
10.	The support system in learning is clearly stated	4	4	4
11.	The instructional impact in learning is clearly stated	4	3	3
12.	The impact of accompaniment in learning is clearly stated	4	3	4
13.	The use of learning approaches is clearly stated	4	3	4
14.	The ability of the learning model in assigning individual tasks	4	3	3
15.	The ability of the learning model in assigning group tasks	4	4	4
16.	Suitability of the model to the level of development of learners	4	3	4
17.	The ability of the model in improving the science literacy of students.	4	3	4
18.	Model ability to create multidirectional communication for students	4	3	3
19.	The ability of the model to direct students to explore knowledge	4	3	4
20.	The ability of the model to direct learners to confirmation	4	3	4
IV.	Selection of Media and Learning Resources			
21.	Accuracy of resources and media utilized in the learning model	4	4	4
V.	Language Eligibility			
22.	Appropriate or unambiguous use of language.	4	3	4
23.	The language used is clear or effective.	4	4	4
Total Number of Scores		86	78	88
Validation Results		93%	84%	95%
Average Validation Results			91%	

4. CONCLUSION

The results of the analysis of the model validation indicate that the MORISE learning model is valid both in terms of content and construct. A validated learning model can serve as a guide and reference for educators in planning classroom instruction, aiding learners in achieving conceptual changes in their conceptions.

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