International Journal of Social Science and Human Research

ISSN (print): 2644-0679, ISSN (online): 2644-0695

Volume 08 Issue 01 January 2025

DOI: 10.47191/ijsshr/v8-i1-33, Impact factor- 7.876

Page No: 281-288

Development of Innovative Learning Design with Character for Teachers and Students of Junior High School in Indonesia

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ABSTRACT: Character education is internalized in all school subjects until the university level in Indonesia. Therefore, it is necessary to obtain a character educational design that assists teachers in the Integration of values into the learning process. This study aims to develop a character learning design in junior high school for three subjects: Mathematics, Science, and Civic Education. The subjects involved in this study are 12 teachers and 141 students in grade seven, eight, and nine from three schools in Pontianak, West Kalimantan. The products produced are three types of character education design model books and nine-character learning design guidebooks for teachers. The results show that the developed character learning design is effective in improving students' character and practical for teachers to use.

KEYWORDS: Innovative, learning design, character, junior high school

I. INTRODUCTION

Character formation is one of the competencies that need to be achieved in every education sector in Indonesia, and it is covered in the curriculum's competencies for spiritual and social attitudes. The formulation of spiritual attitude competence consists of respecting and appreciating the teachings of the religion to which one belongs. Meanwhile, the formulation of social attitude competence demonstrates honest behavior, discipline, responsibility, caring (tolerant, mutual cooperation), politeness, and confidence in interacting effectively with the social and natural environments within the reach of the association and its existence. The growth and development of attitude competence are performed throughout the learning process and taken into account as consideration for teachers in the development of students' character.

The character education used in schools is internalized in the already available subjects rather than being taught in a specific subject. However, in reality, teachers are still not able to integrate character education into the subject matter they teach. Instead, they complain that there are no clear guidelines for integrating character education into the lessons. Hence, these designs help teachers in performing the learning process in the classroom, allowing them to shape the character of students through the subjects they teach.

Character learning, while given as a specific subject, is expected not only to be knowledge, but to be understood as attitudes and actions. Similar to Civic and Religious Education, which is given at different levels of school, it is frequently solely seen as the knowledge that children need to learn rather than as attitudes and behaviors that are to be carried out on a daily basis. Therefore, the purpose of character education is achieved while one applies it correctly in everyday life.

Nurgiyantoro & Efendi (2013) stated that all existing subjects have the obligation and responsibility to participate in the implementation of character education in order to maximize results. Furthermore, this also helps to create a more conducive school culture, since the implementation of learning character value cannot be undertaken in part by particular subjects and the academic community. Therefore, as an education system, all related components that establish its subsystems need to be involved together.

The design of character education through innovative learning models is considered a novelty in existing studies. Furthermore, the character-laden learning design developed in this study is used in Junior High Schools. This study chose Civics Education, Mathematics, and Science as the material point for the development of character education-based learning. Civics education is taught in courses that have a clear connection to character development, with the hope that the learning model created would enable teachers to shape students' character, not limited to the knowledge that needs to be mastered. Civics education is taught in courses that have a direct intersect with character development, with the hope that the learning model created would enable teachers to shape students' character, not limited to the knowledge that needs to be mastered. The learning process in this subject is also becoming more meaningful and relevant by integrating innovative learning models that incorporate students' active

participation, hands-on learning, and creative, meaningful, and fun learning. Hence, forming the character of love for the homeland, cooperation, and independence. (Komalasari, 2009).

Mathematics and science subjects have no direct intersect with character education. These subjects are anticipated to play a significant role in the development of students' character throughout the educational process. Therefore, it is expected that the values contained within will be individually attained through studying these subjects. Through learning mathematics and science, Students are supposed to be meticulous in their work, capable of critical and creative thought, consistent in attitude, honest, obey the rules, democratic, etc. Also, some studies stated that the character of a student is formed through learning mathematics (Astalini, et al, 2023; Bishop, 2012; Seah & Wong, 2012). Similarly, science learning can shape students' character (Khusniati, 2012; Kurniawati & Atmojo, 2017; Putra, 2017).

According to some studies, students' character is improved through the use of learning models in the various subject matter (Darma, et al, 2019; Rao, Collins, & DiCarlo, 2002; Farrell & Farrell, 2008; Harianto, et al, 2020; Derlina, Sabani, & Mihardi, 2015, Rohana, Suryadi, Kusumah, & Afghani, 2015; Stallions & Yeatts, 2003). In contrast to previous studies, students' character is improved through the innovation of several learning models such as Civic Education, Mathematics, and Science lessons. The innovative learning model used adjusts to the results of the analysis of teaching materials and the characters developed.

II. METHODOLOGY

The method employed in this study is research and development (R & D) model of Borg and Gall (1989) which involves the following stages: (1) needs analysis, (2) planning, (3) development, (4) phase I testing, (5) phase II testing, (6) evaluating the effectiveness of the model, and (7) producing the final product.

The needs analysis phase is carried out through observation and interviews with junior high school teachers in Pontianak. At the planning stage, this study developed a learning design that is packed with character by analyzing the subject matter of Mathematics, Science, and Civic Education in relation to the correct teaching model. Also, this study links characters that need to be shaped through innovative learning models. The results of this analysis are presented in the form of a model book that includes learning steps based on the model employed and the characters created at each meeting, as well as a character learning design guide for teachers. The design guidebook is also equipped with Student Worksheets (LKS) that are in accordance with the learning model used at each meeting.

In the development stage, the study validates the contents of the model book and learning design guidebook that are packed with characters. The validator consists of nine people including three mathematics, three science, and three Civics education learning experts. Also, the validation assessment aspects include content feasibility and character assessment. The assessment points and their descriptions are presented in Table 1 and Table 2 below.

Table 1: Content Feasibility Aspects

Rating Points	Description
Learning model accuracy	The learning model used is in accordance with the learning objectives, time allocation accuracy, and language use according to EYD.
Problem/case accuracy	The problems/cases presented in the worksheet are in accordance with reality and are efficient to help students understand the material.
Accuracy of drawings, diagrams, and illustrations.	The pictures, diagrams, and illustrations presented in the worksheet are in accordance with reality and are efficient to help students understand the material and are found in everyday life.
Student Worksheets (LKS)	The worksheets are presented in accordance with the learning objectives, the use of language according to the student's level, and the worksheets promote students to cultivate creativity.

Table 2: Character Assessment Aspects

Rating Points	Description
The Nature of Character	There is a relationship between the material/tasks being taught with real examples of character planting.
Internalization of Character Aspects in Learning	The learning and worksheets presented to promote students to know more, solve problems/questions with full responsibility, discipline, work hard, be independent, behave honestly, respect each other, care, be polite, and be full of confidence.

The content feasibility, and character assessment aspect consists of 20, and 10 statements, respectively. On each of these statement items, the validators are asked to rate, according to the following criteria: (1) score 4: very good, (2) score 3: good, (3) score 2: poor, and (4) score 1: very poor. Each learning design guidebook with character content is validated by three validators. Therefore, it is declared valid when the average score for the three validators is ≤ 3, and the average value is ≤ 4.

Furthermore, the validation of the learning design guidebook in the development stage includes validating the study instrument in the form of character ownership of self-assessment questionnaire for students and a practical questionnaire on the use of learning design guidebooks for teachers. The character ownership self-assessment questionnaire consists of thirty-four statements that are used to measure the characters such as honest, responsible, disciplined, caring, confident, hard-working, curious, appreciative, creative, religious, communicative, and independent characters. The practicality questionnaire consists of twenty statements with five indicators, namely ease of implementation, appearance, and language of the guidebook, relevance to character, usefulness for students, and content of student worksheets.

The next step is the first stage of the trial (phase I testing) conducted in one class involving three teachers and thirty-five students. Furthermore, this phase is designed to improve the product before going to the second phase of the trial (phase II testing) which involves more study subjects. This stage is conducted in the Seventh Grade of a Junior High School in Pontianak and it involves the testing of the study instrument. Following the first phase of the study, the character-packed learning design handbook and the instrument are improved based on the results of observations on the use of the book in learning, and of the analysis of the validity and reliability of the questionnaires.

The fifth stage is the second stage of the trial test, which involves nine teachers and ninety - six of students from Seventh, Eighth, and Ninth-grade from two different of Junior High Schools in Pontianak. This test is conducted to measure the practicality and effectiveness of the character education design model to improve students' character. The results of observations are also used to improve the final product.

The sixth stage is the product evaluation stage. Kesuma, et all (2011) stated that the objectives of evaluating character learning in education are: (1) knowledge of the progress of learning outcomes in the form of ownership of a number of indicators of a certain character in children within a given time, (2) knowledge of the shortcomings and advantages of learning designs made by teachers, (3) knowledge of the effectiveness level of the learning process experienced by children in classroom, schools and at home. According to this viewpoint, the effectiveness of this development product is indicated by an improvement in the student's character ownership self-assessment questionnaire score following instruction utilizing a character-loaded learning design guidebook. Meanwhile, the increase in the score of the questionnaire is tested using the Wilcoxon test.

The practicality questionnaire is used to assess the strengths and weaknesses of the character learning design model. In each item of the practicality questionnaire, a total of nine teachers involved in the second phase of the trial are asked to fill in a statement showing strongly agreeing, agreeing, disagreeing, and strongly disagreeing, with a minimum, and the maximum score of 1,4 respectively. The design of character education is declared practical when the average score of the practicality questionnaire is ≤ 3 and ≤ 4.

III.RESULT AND DISCUSSION

A. Character Education Model Design

The needs analysis is the initial stage of the development research. According to interviews with junior high school teachers in Pontianak, they can still not integrate character education into the subject matter. In addition, they argue that there are no clear guidelines for carrying out this activity. The results of this needs analysis became the basis for developing a design model for character education through three subjects: mathematics, science, and civic education.

Analyzing the content of mathematics, science, and civic education is the first step in developing character-loaded learning systems. The material analysis relates to the appropriate learning model used to teach the content of the three subjects. In addition, it is conducted based on the character formed through innovative learning models. The learning models employed are cooperative, problem-based learning, direct learning, open learning, guided discovery/investigation groups, contextual learning, and creative problem-solving learning. The results of the analysis of the relationship between materials, models, and characters are compiled into a model book (Fadillah, Suhaida, Nurhayati, & Darma, 2019; Suhaida & Fadillah, 2019). Furthermore, as a guide for instructors utilizing model books, this study developed a character learning design handbook consisting of nine books for mathematics, science, and civic education teachers in the seventh, eighth, and ninth grades, respectively. This guidebook also includes lesson plans that correspond to the syntax of the learning model utilized by the teacher in each meeting and worksheets that correspond to the learning model's characteristics.

B. Model Validity Test Results

The validity of the character education design model is conducted by nine validators, three for mathematics, science, and civics education books each. Furthermore, this validator verifies that the character-laden learning design guidebook is a legitimate

representation of the character education design model. The validation findings of nine validators against the learning design guidebook are shown in Table 3.

Table 3: Learning Design Guidebook Validation Results

Aspect	Rating Indicator	Guidebook Validator Average Score		
		Mathematics	**Civics education**	**Science**
Content Eligibility	Learning model accuracy	3,52	3,07	3,26
	Problem/case accuracy	3,33	3,00	3
	Accuracy of drawings, diagrams, and illustrations.	2,89	2,67	3,33
	Student worksheets	3,53	3,20	3,47
Character Rating	Nature of character	3,50	3,17	3,5
	Internalization of Character Aspects in Learning	3,38	3,07	3,67
Average		3,36	3,03	3,37

Based on the validation results of nine validators, the mathematics and civics education design guidebook are used with a slight revision. Meanwhile, the most important part that needs to be improved is the accuracy of drawings, diagrams, and illustrations. However, the science learning design guidebook is used without revision because the average assessment of the three validators for each indicator is more than or equal to 3.

Moreover, to validate the teacher's guidebook, the self-assessment questionnaire on students' character ownership and a questionnaire on the practicality of using the guidebook for teachers are validated by three validators. The validation results are presented in Table 4.

Table 4: Character Ownership Questionnaire Validation Results

Assessment Aspect	Score			Average
	Validator 1	**Validator 2**	**Validator 3**	
The relationship between indicators and characters to be developed	3.44	3.67	3.44	3.52
Conformity of the questionnaire statement with the measured indicators	3.38	4.00	3.00	3.46
The language used is good and correct	3.00	3.60	3.40	3.33
Average	3.27	3.76	3.28	3.44

Based on the validation results from three validators, the self-assessment questionnaire of students' character ownership was used with minor revisions. Table 5 below shows the validation results from three validators of the questionnaire on the practicality of using guidebooks for teachers.

Results from three validators, practicality test can be utilized with a few modifications. The modifications are corrections made by the sentence editor.

Table 5: Practicality Questionnaire Validation Results

Assessment Aspect	Score			Average
	Validator 1	**Validator 2**	**Validator 3**	
Conformity of the questionnaire statement with the measured indicators	3.75	4	4	3.92
The formulation of the statement does not cause double interpretation	3.85	4	3.95	3.93
The language used is good and correct	3.90	3.90	3.85	3.88
Average	3.83	3.97	3.93	3.91

C. Model Effectiveness Test Results

The increase in the self-assessment score of students' character ownership after learning using a character-laden learning design guidebook becomes a reference to determine the effectiveness of the design model, which is tested using the Wilcoxon test. The results of the test are presented in Table 6.

Table 6: Effectiveness of Character Education Design Model

Character	Average score		Gain	P
	Pretest	Postes		
Honest	2,65	3,03	0,37	0,000
Responsible	4,40	4,73	0,33	0,000
Discipline,	4,08	4,34	0,25	0,002
Care	4,42	4,70	0,28	0,000
Polite	4,65	4,77	0,12	0,068
Self-confident	3,69	4,06	0,37	0,000
Hard work	4,40	4,65	0,25	0,004
Curiosity	3,70	4,22	0,52	0,000
Appreciate	3,85	4,09	0,24	0,019
Creative	3,77	4,09	0,32	0,000
Religious	4,73	4,87	0,14	0,023
Patriotic	3,97	4,11	0,13	0,132
Communicative	4,05	4,23	0,18	0,021
Independent	3,66	4,34	0,68	0,000

According to Table 6, several points can be explained as follows: (1) the post-test scores of honest, responsible, disciplined, caring, confident, hard-working, curious, appreciative, creative, religious, communicative, and independent characters are higher than the pre-test scores. The results show that for the twelve characters, the p-value is < 0,05. As a result, it is concluded that the post-test scores of the twelve characters are better than the pre-test scores. Thus, it is believed that the implementation of learning using a design guidebook contains effective content to improve the student character of honest, responsible, disciplined, caring, confident, hard-working, curious, appreciative, creative, religious, communicative, and independent; (2) the post-test scores of polite and patriotic characters exceed their pre-test results. In addition, the test findings indicate that the p-value for both characters is ≥ 0.05. In conclusion, the post-test scores for polite and patriotic characters are not higher than the pre-test scores. Thus, it is thought that the implementation of learning through the use of a design guidebook comprising characters does not increase students' polite and patriotic characters.

D. Model Practicality Test Results

The practicality of the character education design model is based on the teacher's response to the guidebook, which consists of nine teachers. The results of the teacher's assessment are presented in Figure 1.

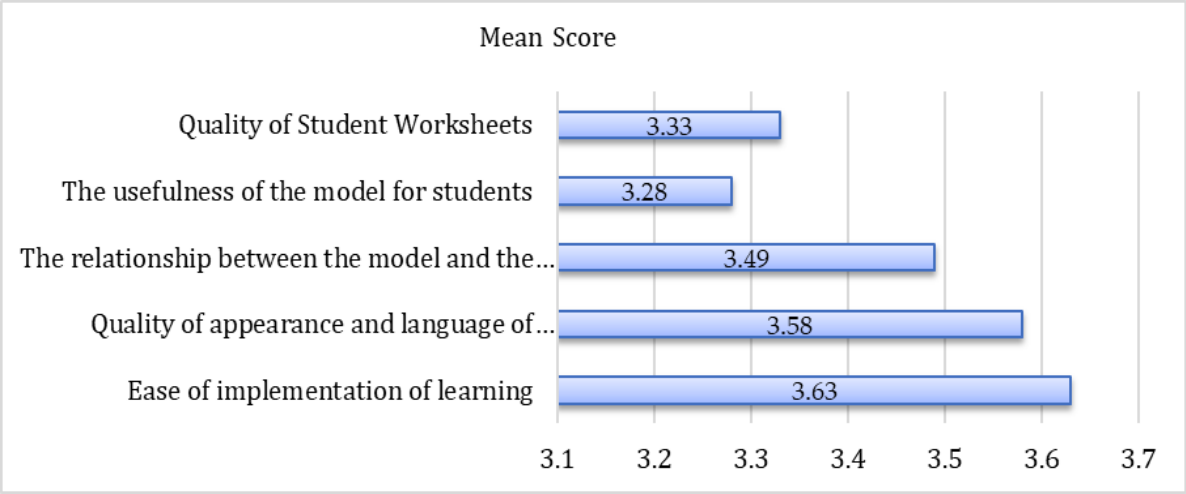

Figure 1: The Practicality of the Character Education Design Model

Based on Figure 1, the average score on all practical indicators is more than 3. Hence, it is concluded that teachers practically use this character-laden learning design model to develop students' character through classroom learning.

E. Discussion

The design of character education learning is required by teachers who are the implementers in schools. Its existence makes it easier for teachers to develop student's character through the learning process. According to Nurgiyantoro and Efendi (2013), a learning design is required to create character values; thus, the learning process focuses more on character development. The character-loaded learning designs produced in this study are contained in the guidebook for mathematics, science, and civics education teachers. The selection of innovative learning models in learning design is conducted by analyzing the relationship between the learning models, subject matter, and characters to be developed. It is predicted that the adoption of numerous innovative learning models to adapt to the character to be created will be able to shape the character of students.

The results of the validation of character-packed learning designs by experts for the three subjects of mathematics, science, and civics education shows that the mean value of this score is greater than 3. Also, it shows that this learning design is suitable for use in the learning process to shape students' character. Character-laden learning designs are helpful as a guide for teachers in conducting classroom learning. As a learning design, it should contain objectives, steps, and management systems (Slavin, 2010).

This study's character-packed learning design guidebook includes the core and essential competencies, indicators of competency achievement, steps for learning activities, and student worksheets (LKS) that adapt to the syntax of the learning model employed in each meeting. The learning steps comprise all of the formed characters; hence, the teacher is mainly concerned with recalling the characters developed during the meeting. In addition, the LKS are organized based on the characteristics of the learning model utilized during the meeting. Motivating words are also taught in the LKS to shape students' character.

In many meetings, the character-laden learning design uses collaborative groups when students solve problems or assignments in LKS. In addition, this contributes to the development of a responsible, hardworking, disciplined, independent, caring, appreciating, and communicative personality. These seven characters experienced a significant increase after students learned by using a character-loaded learning design. From Table 6, it can be shown that the p-value is smaller than 0.05. The assignments are given to the LKS training students to take more responsibility for their work. Working in groups makes students more enthusiastic about completing tasks. Therefore, this is in line with the study of Caulfield & Caroline (2006), which stated that collaborative group learning makes students more motivated and work hard. Additionally, it makes students more disciplined in completing the assigned tasks (Redes, 2016; Harianto, et al, 2020).

When students' complete worksheets, the emphasis on assisting the teacher in completing assignments creates a caring character toward friends who have not fully understood the subject. Also, the communication that exists in study group and class discussions makes students more communicative and learn to respect differences of opinion. Therefore, working together in groups builds the character of caring and respecting each other's opinions (Laal & Ghodsi, 2012).

Standalone characters are required high improvement compared to 13 other characters. Furthermore, learning using worksheets helps students to solve problems or tasks independently or in groups and increases students' independent learning, which no longer always depends on the teachers' explanations. This student's learning independence certainly positively affects their achievement (Rosario, et al, 2013; Ergen and Kanadli, 2017).

The developed worksheets adapt to the learning model. Furthermore, when using the discovery model, the worksheets are designed to guide students in discovering a concept. When using open-ended learning, students are asked to solve problems that have correct answers or with many possible solutions. In project-based learning, students are asked to carefully perform a project. Meanwhile, through problem-based learning models and creative problem solving, students are asked to solve non-routine problems. Students' learning activities in completing worksheets develop their creative character, curiosity, and confidence. When students can solve problems and find concepts given in worksheets, their self-confidence increases (Lorenzo, 2005; Gormally, 2009). Therefore, open problem-solving activities increase students' curiosity and creative thinking skills Fatah, et al, 2016).

The honest character has the lowest questionnaire score of 2.65 and 3.03, respectively (minimum score of 1 and maximum score of 5) in both the pretest and posttest. The students are instructed to fill out a questionnaire on the ownership of this character without writing down the name, as well as to write down and record the pretest code in their notebooks. After learning using a character-loaded learning design, students are again asked to fill out a character ownership questionnaire and write the same code as in the pretest. They can fill out a questionnaire according to their circumstances. The average score for honest character is low, indicating that most students do not have honest character. The teachers' attention is unquestionably essential in the learning process. According to Su'ud, et al (2020), honesty positively impacts individuals' physical and mental health and is related to many psychological traits; hence, it is recommended to infuse honesty education in various disciplines.

In general, the effectiveness test results show that the application of this character education design model has improved students' character but has not been able to enhance the character of courtesy and love for the homeland. It is evidenced by the Wilcoxon test results in Table 6 with a p-value > 0.05, which implies that polite characters already have a good score before being

given a lesson using a character-loaded learning design. A slight increase in the statistical test results shows no significant change since several factors shape the character of students besides the learning process. Suparno (2018) stated that factors affecting character formation include self-concept, social environment, learning environment, and parenting patterns. Polite characters that had high scores before treatment are because they have been formed in students through interaction with their environment and the patriotic character that has been instilled since elementary school.

The application of the character-laden learning design receives a positive response from the design user model teacher in implementing product dissemination. It is shown by the average score of 3.46 on the practicality questionnaire of 3.46 (maximum score of 4). Sardjijo and Ali (2017) stated that teachers write down what types of characters need to be developed in the plan (RPP). However, most teachers do not comprehend how to emphasize the types of characters outlined in the lesson plans during the learning process. The steps of learning activities in the design guidebook contain characters that need to be formed through these learning steps. This makes it easy for teachers to remember which characters need their attention during the learning implementation, thereby making it easier for teachers to integrate character education. This is in line with the opinion of Hidayati (2020), who stated that character education needs to be programmed into the teacher's learning plan.

CONCLUSIONS

The learning design guidebook's product contains a character developed to address the aspects of validity, effectiveness, and practicality. Furthermore, nine validators acknowledged that the learning design guidebook contains valid characters and is used in the learning process to improve students' character. Statistical tests indicate that character-packed learning design effectively enhances students' character who is honest, responsible, disciplined, caring, confident, hard-working, curious, appreciative, creative, religious, communicative, and independent. However, this design is effective in improving the polite and patriotic character. The learning design contains practical characters for teachers, making it easier for them to integrate character education into the learning activities.

Character learning designs in mathematics, science, and civics education are expected to shape students' character. Therefore, developing character learning designs in other subjects is necessary to obtain optimal results in forming students' character through classroom learning.

ACKNOWLEDGMENT

The authors are grateful to: (1) Directorate of Study and Community Service, Ministry of Study and Technology-BRIN as the budget provider, (2) Leaders of LPPM IKIP PGRI Pontianak and all staff that have facilitated the study, authors of learning design guidebooks, validators, junior high school teachers in Pontianak that became exemplary teachers in the trial use of learning designs, and other parties which have helped in the smooth running of this study either directly or indirectly.

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