



Development of 3CM T-Merdeka Media to Enhance Creative Thinking Skills

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ABSTRACT

The objective of this research is to design and evaluate the validity, usability, and efficacy of *t-merdeka* media in augmenting imaginative problem-solving abilities among junior high school students within the 3CM learning context. The development procedure adhered to the Borg & Gall approach, encompassing the following phases: (1) information gathering; (2) planning; (3) initial product development; (4) preliminary field testing; (5) main product revisions; (6) main field testing; and (7) operational product revision. The study's products were devised via collaborative group dialogues and were validated by professionals. Individual trials, small-group testing, and large-scale testing were executed during the product development phase. A single-group pretest-posttest design was employed. The findings suggest that *t-merdeka* media learning can potentially strengthen the enhancement of one's creative thinking skills during the learning process in 3CM for junior high school students, as substantiated by materials and media evidence. In light of the outcomes from the pretest, post-test, paired samples T-test, and evaluations from both teachers and students, *t-merdeka* media appears to be distinctly beneficial.

Keywords: *Creative Thinking, T-merdeka Media, 3CM Learning.*

1. INTRODUCTION

High-IQ people are needed to solve globalization's ever-changing problems. High intellectual capabilities include logical, systematic, analytical, careful, creative, and competitive problem-solving and communication [1]. Developing students' creative abilities is also one of the reasons for changing the Indonesian national curriculum from the 2013 Curriculum to the Independent Curriculum in Indonesia. One of the concepts of independent learning is giving birth to the ability to think creatively, which gives more freedom in the field of education [2]. Thinking is an important mental activity to process information so that it becomes useful. One form of thinking is higher-order thinking, which is manifested in critical and creative thinking [3].

Since 2001, Chinese education has prioritized innovation. Hong Kong's education policy considers creativity "higher order thinking skills". Preschool, primary, and secondary education changes priorities' innovation. Turkish education is increasingly discussing creativity, although efforts to improve it are limited. "Unlocking Creativity" is an Irish education and creativity strategy paper [4]. The capacity for creative thinking is one of the

cognitive components of students that supports their success [5]. The ability to think creatively is an ability that is categorized as a "high order thinking ability" or High Order Thinking [6]. Most people are unaware of their creative potential. Careful approaches can accelerate intelligence-based creativity. Creativity, possible in all human intelligence-based pursuits, involves both a mental process and an action [7]

From the opinions above, it can be concluded that the capability for creative thinking is the ability to provide new ideas by way of thinking and realizing their imagination, as well as offering chances for students according to fluency, flexibility, originality, and detailing or elaboration. So that it becomes a mental habit developed through attentiveness to intuition, enlivening imagination has the power to unveil fresh opportunities, unveil fascinating viewpoints, and spark unforeseen concepts [8]. This condition requires the ability of a teacher to cultivate the creative thinking abilities of students, which have implications for creative activities. Teachers do not only focus on completing material but also on how to develop creative thinking skills so that students' creativity increases. The main task of education is to create people capable of doing

something new [9].

One way to make this happen is to apply a learning model that gives students the opportunity to develop creative thinking skills that encourage creativity. One learning model that can be applied is 3CM learning. Designed to cater to each individual student's preferred method of instruction, this model makes learning both enjoyable and stimulating [10]. The cool-critical-creative-meaningful (3CM) model will eventually be renamed the Cool-Critical-Creative-Meaningful (3CM) model. Education should provide memorable experiences and chances for students to participate in activities that are exciting, thought-provoking, imaginative, and purposeful [11]. Students are invited to think critically and creatively in a cool and fun atmosphere, but they must provide challenges. To support this phase, several facilities and media are needed so that students can learn in fun and challenging situations, one of which is with games.

The game that will be developed is intended for junior high school students. For this reason, the development of this game is adapted to the characteristics of students in junior high schools. The game to be developed is called *t-merdeka*, which combines board games and puzzle media. With this game facility, it will give students the opportunity to play, but there are activities that challenge them because there are missions that must be completed. With this activity mechanism, it will give students the opportunity to enter Phase 1 of the 3CM learning model, namely Cool (Play and Challenge).

2. LITERATURE REVIEW

2.1 Media Board Game

Board games, also known as "board games," are a form of game that involves a number of objects that are placed and exchanged based on determined rules on a surface that has been marked or in the form of a board [12]. The media board game is in the form of a game played in groups. With board game media, students can learn and play, so that fun learning can be created as well as offering chances for students to be able to solve a problem [13]. In board games, tools or game components are put or moved on a surface that has been demarcated or partitioned in accordance with a set of rules [13]. Drawing from the perspectives shared earlier, one can conclude that a board game is a game that is played with a minimum of two players, with the main component of the game being the board. Other components include token cards and banknotes. By type, [14] categorize board games as follows: This Strategy Board game uses the strategy and skills of the players to win the game. When members of a team compete against one another, everyone gains knowledge together; nobody feels excluded simply because they do not know the answer. Asking questions will help verify understanding and determine which areas of education are most important. It is possible that abstract ideas could be represented by a board game [15]. In this game, each piece has a different way of moving from one another.



Figure 1. Example of strategy board game (chess)

This type of board game has simple rules, and invites players to work on strategy, not relying on luck. This

type of board game mostly has a theme about economy and simplicity, not about war.

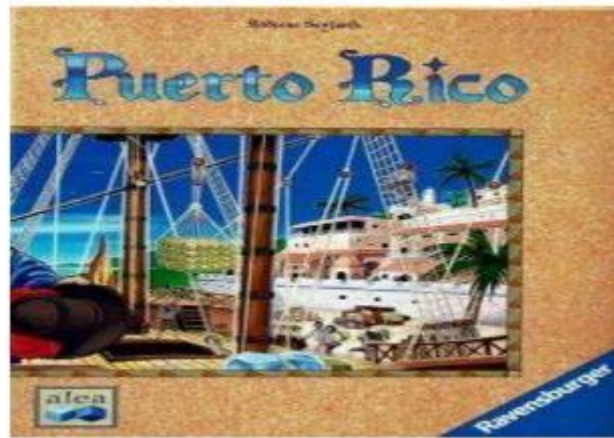


Figure 2. Example of Eurogames (Puerto Rico)

The way to play this type of board game is to compete to reach the end of the game by moving

their pieces. An example of this game is Pachisi which at this time is better known as ludo.



Figure 3. Example of a Race Game (pachisi)

This type of game uses dice or other media to generate random numbers/numbers. This number will be used to determine the number of steps a

player must take. This type of game relies heavily on luck. Examples of these games are monopoly and game of life.

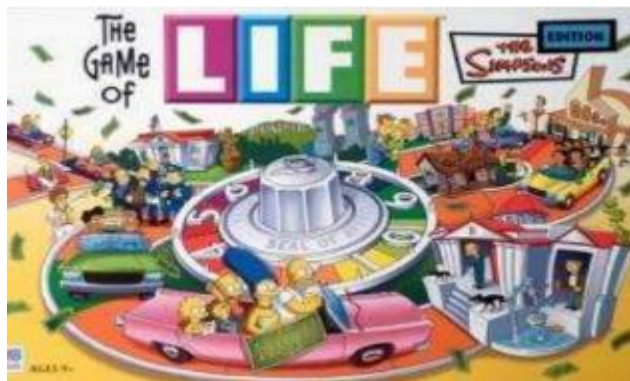


Figure 4. Example of a roll and move game (game of life)

This type of game relies more on the general knowledge of the players. The player who can

answer the most questions is the winner. An example of this type of game is trivial pursuit.



Figure 5. Example of a Trivia Game (trivia pursuit)

This type of game relies on the intelligence of the players to process words and letters. Examples of

this type of game are scramble, boggle, anagrams.



Figure 6. Example of a Word Game (Boggle)

Based on the type, the researcher will develop a board game media that combines German-Style Board Game and a Trivia Game called *t-merdeka*. *T-merdeka* which was developed uses a strategy to

produce a certain form with a puzzle model and is equipped with question cards according to a certain theme to solve problems as a means of developing creative thinking abilities.

2.2 Creative Thinking Ability

Creativity is the capacity or quality to articulate oneself in one's distinctive manner. Given its importance and pertinence in virtually every sector, it is a subject of rising study. An individual's worries and wants, as well as his or her viewpoint on education, are evolving in this age of information and technology [16]. The capacity for creative thinking is one of the mental aspects of pupils that supports their success [5]. Creative thinking has a tendency to train students to issue ideas that arise or express themselves in the learning process [17].

Creative thinking entails a fresh perspective and approach towards tasks, encompassing four elements: fluidity, adaptability, uniqueness, and detailed expansion [16]. Creativity is not innate but something that can be generated and trained by delivering a stimulus or enticement to the brain. Games or producing artwork can stimulate the brain to think creatively. By exercising creative thinking, the motivation to do, make, and create anything is

wide open, so it can produce something original [18]. Why is it that individuals everywhere claim they cannot think of anything new to say when they are put on the spot to provide an imaginative response? It is because most individuals aren't putting in their full intellectual effort. Generally, the average person uses less than one percent of their brain in the areas of creativity, memory, and learning. If people can use their brain power to reach 20 percent, 40 percent, or even 100 percent, this will give extraordinary creative results. A mind map provides training for optimizing the brain's potential for producing something creative [19].

Creative thinking is closely related to creativity. This form of creativity may manifest through imaginative endeavors or the amalgamation of ideas, where the outcomes extend beyond mere summaries, potentially leading to the establishment of new patterns, the melding of insights gained from past experiences, or the creation of new associations [20]. The outcome of one's inventiveness. This concept

will be used as a guide when developing instruments to evaluate the cognitive ability of kids.

Table 1. Explanation of the syntax and the learning activity in the context of 3CM

3CM Learning aspect	Learning syntax	Description	
Cool	Motive Contextual difficulties	Gives pupils challenging real-world challenges to work on in an engaging and supportive academic setting. This plays a vital role in inspiring students. During this preliminary step, the students are given the opportunity to critique the contextual concerns that are presented.	Schemata and creative thinking ability
Critical	Critique of a contextual problem	Students are asked to solve contextual difficulties by first criticizing them.	
Creative	Execution of a creative product	Students should consider what creative output might result from using the prior notion.	
Meaningful	Reflective verification	Teacher and students debate the result to make sense of the lesson and decide how to apply it.	

3. METHODOLOGY

Developmental investigation as per Borg and Gall in [21] is a process used to develop and facilitate research products. Development research is used in research that aims to create a product and assess its productiveness of the product. According to [22], educational research and development (R&D) represents a procedure employed for the creation and verification of educational materials. The model that corresponds to the results of this study is the Borg and Gall model with the result being a model product or manual that involves lecturers and teachers in schools. However, this research was conducted using the Borg and Gall model which was limited to step 7 only. If you are planning on doing an R&D project for your thesis or dissertation, remember

what Borg and Gall say: start small, with as little original instructional design as possible; avoid using costly instructional media like film and synchronized slide-tape unless you have deep pockets; and cut back on development so that only a few steps of the R&D cycle are completed [22].

Borg and Gall's explanation shows that the 10 steps in R&D can be limited, so in this study, the Borg and Gall model is limited to step 7 because research using large-scale R&D requires a lot of money, quite a long time, and originality. Time and research implementation constraints up to Step 7 are adequate to validate the validity and practicability of a generated model. Based on the explanation above, the steps in this development research can be described as follows:

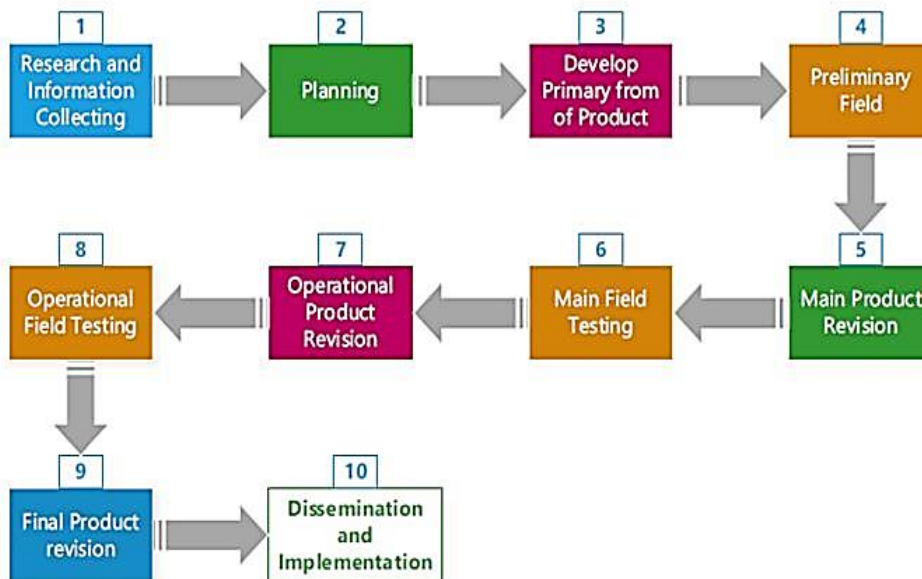


Figure 7. Development Flowchart

In this development research, in order to produce a product, expert analysis of materials, media, and learning is needed. The validity category of each aspect or overall aspect that is assessed is determined based on the criteria for categorising the quality of the equipment based on the categorization according to [23] as follows:

$3.51 \leq M \leq 4.0$ very valid category

$2.51 \leq M \leq 3.50$ valid category

$1.51 \leq M \leq 2.50$ less valid category

$0.0 \leq M \leq 1.50$ invalid category

Information:

M = average score for each aspect assessed

Furthermore, to measure the level of agreement among raters on the results of the assessment/validation of research instruments by experts, a reliability test was carried out using SPSS for windows version 23 with Cronbach's Alpha model. Critical prices or reliability standards should be consulted to determine instrument dependability. Instrument dependability index is 0.7 critical. A dependable instrument has an Alpha coefficient of at least 0.7 (Kaplan, 1982) in [24].

4. RESULTS

The results of this study can be explained in the development stage with the Borg and Gall model limited to step 6:

4.1 Potential and problems

The initial stage of the researcher is to make observations to explore potentials and problems that aim as a basis for researchers to carry out development so that the development carried out by researchers is right on target. Based on the initial observations conducted by researchers through interviews with teachers, it was discovered that the learning procedure remained predominantly governed by delivering material with lectures, assignments and question and answer. Learning has not provided numerous chances for students to enhance their creative thinking abilities. The learning model used is not in accordance with the principles of learning in developing creative thinking skills. In addition, media or learning aids do not yet support learning activities that are able to improve creative thinking skills. This causes

students' creative thinking abilities to be still in the less category. There needs to be a change in the way of learning with a learning model that fits the need to improve creative thinking skills. One model that can be applied is the 3CM learning model because this model is proven to improve students' thinking skills and creativity [25]. In addition, it is also necessary to prepare media that supports learning activities to improve creative thinking skills and in accordance with the characteristics of students in class VII. Not only active body by moving here and there but also active in terms of creative thinking. For this reason, it is necessary to develop media that makes them happy to play but also develops their creative thinking skills. One of the media that can be developed is a board game media called *t-merdeka*. *T-merdeka* media is designed to be a game that is played in groups in learning with the 3CM learning model. Media *t-merdeka* provides opportunities for students to compete, work in teams and learn actively so that their creative thinking skills increase.

4.2 Data collection

At this stage, the researcher has gathered data using documentation techniques. The analyzed documents include lesson plans and instruments utilized in implementation, evaluation, and reporting.

4.3 Product Design

After obtaining a set of materials and competencies that must be achieved by students, the research continued product design. The product design that has been carried out by the researchers aims to design a standard *t-merdeka* model that is in accordance with the potential encountered during interviews during the initial observation activities. The design stage is carried out by making a story board to explain the outline of the *t-merdeka* game that will be developed. The story board explains coherently, from the appearance of the board game, card design, puzzles, how to play and the rules of the game on *t-merdeka* media. After the design is complete, the second step is the implementation of the story board into the product using the Canva application. The design process is adjusted to the characteristics of students for display and also the images used [14].



Figure 8. View of the T-merdeka Board Game

Board games on *t-merdeka* media are made with a combination of green and pictures of activities that are usually carried out every day. The board game in *t-merdeka* Media has sections to support the game. The numbered paths become the player's tracks. Street numbers have three colors': yellow, red, and blue. Each colour has its own command. If the player

stops on the yellow number, it means just passing; if the player stops on the red number, he gets a mission card; and if the player stops on the blue number, he gets a chance card. Apart from that, board games in *t-merdeka* media also have a card slot on the right, while the game rules are at the bottom right.

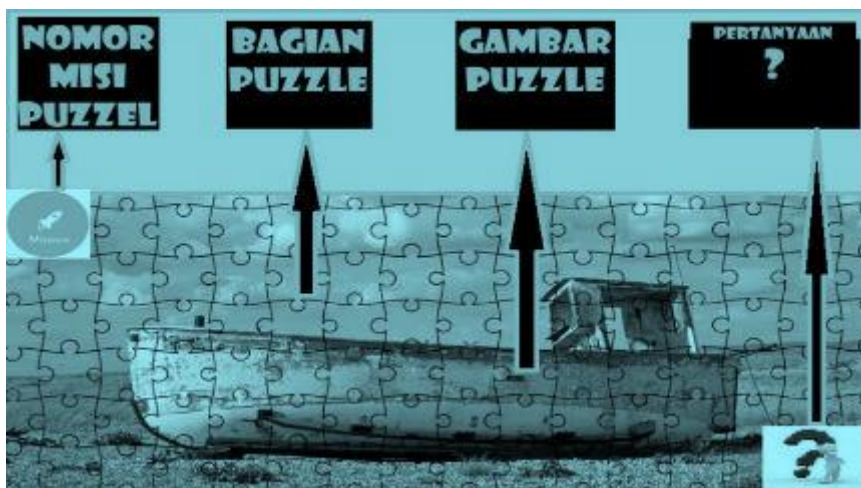


Figure 9. Display of the T-merdeka media puzzle

Puzzles are one of the educational games that can hone students' thinking skills. They have to think quickly to be able to arrange the pieces of the puzzle into a logical order. The puzzle was created as part of a mission in the *t-merdeka* media. Students are

invited to think creatively here. When students receive a mission, their task is not only to arrange puzzle pieces into logical images, but there are also questions that students must answer within a time limit.



Figure 10. Display of *T-merdeka* media card

Media *t-merdeka* has three cards: number cards, mission cards, and opportunity cards. Each has conditions. The red card is the number card to determine where the player will stop, and the black

4.4 Design Validation

At this stage, the media that has been designed enters the material selection and printing stages. Outdoor printing uses media printing to achieve better results. After the media has finished printing, do the expert test. After being converted in the eligibility category, the acquisition of value from material experts reviewed from learning receives a total score of 127; a score of 3.53 is obtained from a range of scores of 3.25 x 4.00, indicating that *t-merdeka* media is possible to be trialed in the field. Meanwhile, the score obtained from media experts obtained a total score of 76 after being converted in

card is the mission card to determine what mission they get. The blue card is an opportunity card. This card contains questions that must be answered by students.

the eligibility category; a score of 3.61 was obtained from a range of scores of 3.25 x 4.00, which indicates that *t-merdeka* media is feasible to be tested in the field.

4.5 Design Revision

Design revision, the product revision stage is carried out after obtaining evaluation results from material and media experts. The part that received suggestions for improvement was then revised and then tested in the field.



Table 2. Revision Design

Expert Advice	View Before Revision	Display After Revision
<p>The command line becomes: "arrange the puzzle and complete the mission in the mission box 6".</p>		

4.6 Product Trials

Product trials are carried out after the product has been repaired according to expert recommendations and approval. The implementation of the *t-merdeka* media product was carried out in class VII of SMP N 2 Kembang Tanjung. To see the practicality of implementing *t-merdeka* media products,

measurements were made of teachers' and students' responses to the implementation of learning with *t-merdeka* media using a questionnaire. The results obtained from the teacher's response score 2 with a very good category so it is feasible to use. While the student response was 1.24 with a very good category so it was feasible to use.

<p>It is suggested that the puzzle parts be written in numbers so that students arrange the numbers as well.</p>		
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In addition to measuring teacher and student responses, observations were also made on the implementation of learning with *t-merdeka* media. This data is used to see the implementation of learning with the model that has been applied. The observation results show that 100% of the learning steps are carried out properly as shown by the measurement result score of 3.53. To see the effectiveness of using *t-merdeka* media, it can be

seen from the results of the paired sample t test, the results of the pre-test and post-test. Based on the results of calculations and hypothesis testing, the value of sig. (2-tailed) is 0.000 or less than 0.05 so that it can be said that there exists a notable disparity in the average results of creative thinking ability between the results of the pre-test and post-test as illustrated in Table 2:

Table 3. The outcomes of the Paired Samples Test

Levene's Examination for Uniformity of dispersions				t-test for Equivalence of Averages						
		F	Sig.	Q	Df	Sig. (2-tailed)	Mean Differences	std. Error Difference	Interval of Confidence at 95% Regarding the difference	
									Lower	Upper
Learning outcomes	Assume equal variances.	4,835	.045	-6,779	55	,000	-31,155	3,279	-28,645	-15,941
	Uniform variances not presumed			-6,779	45,300	,000	-31,195	3,279	-28,695	-15,913

5. CONCLUSION

According to study and discussion, the *t-merdeka* game medium is valid, practical, and effective in teaching pupils creative thinking. Students' ingenuity in solving problems as games increases with creative thinking. Media experts scored 3.65 (very good), while material experts scored 3.59 (very good). The teacher and student response questionnaires gave *t-merdeka* game media very good grades of 3 and 1.45. *t-merdeka* improved kids' creativity. Hypothesis testing showed an average difference in pre- and post-test outcomes of sig. (two-tailed) 0.000.

AUTHORSHIP CONTRIBUTION STATEMENT

Conceptualization, design, analysis, writing, interpretation, and drafting of the paper were all responsibilities of Basri. Editing and revising, supervision, technical assistance, material support, and final approval make up the Zaiturrahmi. Reviewing, supervising, and providing technical, statistical analysis, technical assistance, material support are all provided by Muhammad Iqbal and Silahuddin as supervisor in this research.

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