Character-Based Learning and Critical Thinking with UNOMAT Media

Besse Harnanengsi Har [1*], Nurdin Arsyad[2], Rusli[3]
[1]Postgraduate Program Mathematics Education, Universitas Negeri Makassar, Indonesia.
Email: harnanengsiharun@gmail.com
[2]Departement of Mathematics, Universitas Negeri Makassar, Indonesia
Email: nurdin.arsyad@unm.ac.id
[3]Departement of Mathematics, Universitas Negeri Makassar, Indonesia
Email; rusli@unm.ac.id

Abstract

This research aims to determine character-based learning and critical thinking through the development of UNOMAT media. This research is a Research and Development 4D model. The research instruments used were student activity observation sheets, student learning outcomes tests, student response questionnaires, teacher response questionnaires, and validation sheets. The UNOMAT learning media was tested on a limited basis to class IX students MTs As'adiyah No.34 Doping which consisted of 30 students. The results of this study indicate that the resulting UNOMAT media is included in the good category with an average validity value of 3.94 (Very Valid). The media meets the practicality aspect as indicated by the average observation ($\overline{X}$) = 2.51, with the percentage of agreements being 97.30%. And for the effectiveness of the UNOMAT learning media, the average student response was 81.04%, the students stated a positive response to the student activity sheet, and the average student learning outcome test was $82.22 \geq 75$ in the complete category because it is greater than the KKM. The conclusion is that this learning media can be developed with other materials and can be developed with some improvements.

Keywords: Character Learning; Critical Thinking; UNOMAT Media.

INRODUCTION

Character education emphasizes the formation of positive characters, social skills (social skills), and individual emotions (Berkowitz and Hoppe (2009), Richardson et al. (2009)). The strategic reason why character education is instilled in students in schools is that through formal education, values can be instilled in the subject matter delivered. This method is quite effective because students unconsciously do two things at once, namely mastering the material and improving the quality of their character. But the dynamics of human character can come from within (internal factors) and from outside humans themselves (external factors).

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Based on the results of research at Harvard University in the United States (in Ali Ibrahim Akbar, 2000) shows that a person's success is not determined solely by knowledge and technical abilities (hard skills) but rather by the ability to manage oneself and others (soft skills). Given that soft skills are more directed toward psychological skills, the impact caused is more invisible but can still be felt. Soft skills are closely related to a person's character. Character is the key to an individual's success.

The Character Education Partnership in the United States voiced standards for quality character

education in the Eleven Principles of Effective Character Education and Character Education Quality StandardsLickona, T, Schaps, E., & Lewis (2003). Standards contain an explicit values agenda and school-wide implementation. In addition, it promotes positive relationships and intrinsic motivation, defines character comprehensively, builds partnerships with parents and the community, and is data-driven. So far, it is rare to find schools that meet all of these standards (Wahyudin, 2015).

According to Frydenberg & Andone (2011), to face learning in the 21st century, everyone must have critical thinking skills, knowledge and skills of digital literacy, information literacy, media literacy, and mastering information and communication technology. This is where critical thinking is needed to respond to the new things we get from the digital world. According to (Trilling & Fadel, 2009), 21st-century skills focus on critical learning skills and innovation. These skills consist of critical thinking and problem solving, communication and collaboration, and creativity and innovation.

Luther (2012: 115) argues that the function of education is to teach someone to think intensively and think critically. Trilling and Fadel (2009) state that critical thinking skills are individual abilities to reason effectively, ask questions and solve problems sharply, analyze and evaluate alternative views, and reflect on processes and decisions. Thus, critical thinking skills are an important component of learning mathematics. But to get a strong character like that, we must fix how we learn and think.

In addition, media problems can guide students to have good character, or it can be said that positive characters are also very necessary. This is done so that students not only become smart people but also have character and can implement them in everyday life. And one of the media used in character-based learning and critical thinking is UNOMAT media, where this media is one of the tools used to help students in the process of learning mathematics by playing.

Thorndike (in Arifin, 2009) states that learning will be more successful if feelings of pleasure or satisfaction immediately follow the student's response to a stimulus. According to Thorndike's learning theory, there are 3 laws: the law of exercise, the law of readiness (low readiness), and the law of effect. The law of practice states that the more frequent the stimulus-response relationship occurs, the stronger this relationship will be.

One of the reasons why students are not interested is because they are addicted to online games; when learning takes place, students prefer to learn by playing. The game is a context between players who interact between one player and another by following certain rules to achieve certain goals, Sadiman in (Rosary: 2019). According to Komariyah (2021), the addition of games to learning has two positive aspects: attractiveness and education. One of the learning media that can involve students in learning mathematics is by using game media.

One game media that will create an uplifting atmosphere and support the achievement of mathematics instructional goals is the UNOMAT card game which is applied in the character-based learning process and trains students' critical thinking skills. Where not only paying attention to students' excitement in playing the UNOMAT card itself but having an impact on the learning process. Jean Piaget's cognitive theory is one of the theories that underlie the development of play and game activities. Tedjasaputra (2005:8), according to Piaget, in line with the cognitive development of a child's playing activities, undergoes changes from the sensory-motor stage, imaginary play, to social play accompanied by game rules. Based on the problems that have been described, the authors conducted a study entitled "Character-based learning and critical thinking with UNOMAT media.

METHOD

The research carried out includes research and development. The development model used is the Four-D Model. The 4D model has four stages, namely the definition stage, the design stage, the development stage, and the dissemination stage. The Disseminate stage is not carried out in future research because it is limited to the Develop stage. And the distribution is limited.

Data were collected using qualitative data and quantitative data. Qualitative data were obtained from the results of distributing questionnaires/questionnaires to teachers and students in the form of narratives, interviews with teachers related to the analysis of student needs, suggestions, and comments from homeroom teachers and students themselves on character-based learning, and critical

thinking with UNOMAT media. Quantitative data was obtained from test results, validation of material experts, and media experts. The test location for UNOMAT media development products is MTs As'adiyah No. 34 Doping. The test subjects were grade IX students.

The research instruments used were (1) media validation sheets and learning support devices, (2) observation sheets on the implementation of media and learning support devices, (3) student activity observation sheets, (4) teacher response questionnaires, (5) student response questionnaires and (6) learning outcomes test. The data analysis methods in this study are validity analysis, practicality analysis, and effectiveness analysis.

The validity analysis adapted from Arsyad (2018) was carried out by calculating the average of each criterion from the validator, the average of each aspect, and the average total validity with the specified category. The categories used are:

Table 1. Validity Category

$4,5 \leq \bar{x} \leq 5,0$	Very Valid
$3,5 \leq \bar{x} \leq 4,5$	Valid
$2,5 \leq \bar{x} \leq 3,5$	Quite Valid
$1,5 \leq \bar{x} \leq 2,5$	Less Valid
$1 \leq \bar{x} \leq 1,5$	Invalid

If the validation results show that they are not valid, then revisions are made.

Practical analysis adapted from Nurdin (2017:147) Determines the implementation of each aspect or all aspects of media and devices in learning by matching the average of each aspect and the total average with the implementation category. The categories used are $\bar{A}_i(\bar{X})$.

Table 2. Practical Category

$2,5 \leq M \leq 3,0$	Completely implemented
$1,5 \leq M < 2,5$	Mostly implemented
$0,5 \leq M < 1,5$	Executed a small part
$0 \leq M < 0,5$	Not done

The criteria for observing the learning implementation sheet are said to be reliable if the reliability value (R) is $\geq 75\%$.

Effectiveness analysis from the results of data analysis obtained from three indicators, namely (1) learning outcomes tests, (2) student responses, (3) student activities. UNOMAT media is said to be effective if at least 75% of the students are in a complete category and more than or equal to 50% of students give a positive response. Students are said to be complete if they get a score more than or equal to the Minimum Completeness Criteria (KKM).

RESULT AND DISCUSSION

The procedure for developing character-based learning and critical thinking with UNOMAT media and learning tools used in this study refers to the development model of Thiagarajan, namely the 4-D model with a sequence of development stages, namely the definition stage, the design stage, the development stage (develop) and the stage of dissemination (dissemination).

The results of developing character-based learning and critical thinking with UNOMAT media and learning tools are described as follows:

1. *Define* **(Defining Stage)**

At this stage, define the requirements needed in learning and determine material boundaries and problem boundaries. This activity is set in advance as a basis for moving on to the next stages of development. The result at this stage is that the need assessment is only limited to the attitude required in 21st-century life related to the 4Cs (communication, critical thinking, collaboration & creativity). The 4Cs attitude indicators were adapted from the Assessment and Teaching of 21st Century Skills (ATC21S) (Griffin, McGaw, & Care, 2012; P21, 2011).

In education, character-based learning is a very appropriate alternative to improve the atmosphere of the current national education process. Theories about character formation can be

learned, one of which is the human color code theory, coined by Taylor Hartman, who divided humans based on their basic motives. However, in his book "Highly Effective Human Habits," Stephen Covey concludes that there are three main theories underlying it: Genetic Determinism, Psychic Determinism, and Environmental Determinism.

Based on various research results, critical thinking skills can be improved by learning models. However, only some learning models can automatically improve critical thinking skills. Only certain learning models will improve critical thinking skills. Learning models that can improve critical thinking skills contain at least three processes, namely (a) mastery of the material, (b) internalization, and (c) transfer of material in different cases.

At this definition stage, not only pay attention to the learning model controlled by the teacher but also pay attention to the media that will be used in learning mathematics. And one of the media that will be integrated with character-based learning and critical thinking is UNOMAT media. The preliminary stage is done by looking at the students' difficulties in solving math problems. Students need to be more careful in counting. The practice questions used make students bored because the questions given are monotonous and always the same type, only differing in numbers. Therefore, teachers can use learning media that can attract students' interest in getting a deep understanding through the process of practicing the mathematical concepts they get.

2. *Design* (Design Stage)

The developed learning model is designed with complete syntax and objectives at the design stage. The learning model must meet the five elements of the model characteristics, namely: (1) syntax, (2) social system, (3) reaction principle, (4) support system, and (5) instructional impact and accompaniment (B. Weil & Calhoun, 2000).

The description syntax of the character learning model is described below:

2.1.1 Collect

Students are directed to collect information related to the material learning based on everyday experiences. This information can be in the form of problems that are being faced by the surrounding community and symptoms of problems that have not been troubling the community. At this stage, it is expected that attitudes emerges are tolerance, creativity, curiosity, communication, social care, a caring environment, and responsibility.

2.1.2 Crush

Information about learning materials in the form of problems that have been collected and then consulted with a group of friends. At this stage Also, students can discuss alternative solutions to problems that have been collected. Attitudes that are expected to emerge at this stage are tolerance, discipline, hard work, creativity, independence, democracy, curiosity, and a love of peace.

2.1.3 Analysis

The analysis stage is to analyze further and more rationally and process information about possible alternative solutions. At this stage, the alternative solutions provided are further analyzed so that students can choose the most suitable solution to be applied as a solution problem. Attitudes that are expected to be inserted through this stage are honesty, tolerance for diversity, discipline, hard work, creativity, independence, curiosity, the spirit of nationalism, love for the homeland, achievement, love of peace, care for the environment, and socially caring, and responsible.

2.1.4 Communicate

The most appropriate solution to the next problem is to communicate with teachers and community representatives who are problem targets. Good communication between teachers, teammates, and the community can stimulate students to be able to develop and cultivate a religious attitude, respect for elders, honesty, tolerance for diversity, discipline, hard work, creativity, independence, the democratic spirit of nationalism, love for the homeland, achievement, communicative, love peace, care for the environment, social care, and responsible.

2.1.5 Apply

At this stage, the alternative solutions that have been selected are not only communicated to teachers and community representatives but also directly implemented so that the function of the

alternative solution can be appropriately optimized. The attitudes that are expected to emerge, namely religion, honesty, tolerance for diversity, discipline, hard work, creativity, independence, democratic, curiosity, passion for nationalism, love for the homeland, achievement, communication, love of peace, love to read, care for the environment, care about socially, and be responsible.


Figure 1. Syntax character learning model

Then at the design stage, the thing that needs to be considered in character-based learning is students' critical thinking skills. Critical thinking includes high-level thinking processes because when making decisions or drawing conclusions using active control, namely reasonable, reflective, responsible, and skillful thinking. Only some people can think critically because it takes a strong and basic belief, so they are not easily influenced.

This design stage aims to design UNOMAT learning media and learning tools so that prototypes are obtained (student books, learning tools, and research instruments). This activity includes making initial media designs, making media, preparing learning outcomes tests, and designing and making learning tools. The results of the UNOMAT media design are as follows:

a.   Draw 2 Card

When this card is played, the player must take two cards on the next turn. To be able to play this card, the player must match the color on the deal card.
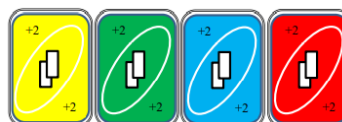
Figure 2. Draw 2 Card

b.   Reserve card

When this card is played, the direction of the game is reversed. Games that rotated clockwise to counterclockwise. To be able to play this card, the player must match the color on the deal card.

Figure 3. Reserve Card

c.   Skip Card

When this card is played, the player on the next turn will not be able to play his turn. To be able to play this card, the player must match the color on the deal card.

Figure 4. Reserve Card

d.   Wild Draw 4 Card

When this card is played, the player, on the next turn, must take four cards, and the player must also play a card with a color that matches the player's wishes and play 4 wild card draw. This card can be played anytime without matching colors like other action cards.

Figure 5. Wild draw Card

e.   Players match cards by paying attention to the color of the card and the question card.
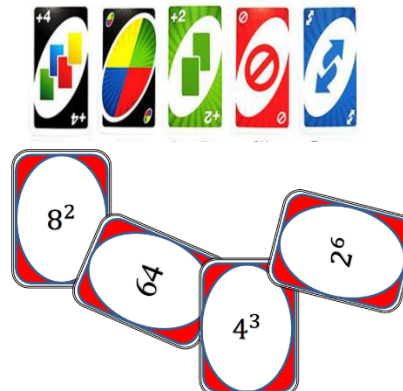
Figure 6. Players match

3. *Develop* (Development Stage)

At the development stage, learning tools were prepared using the character learning model syntax and product validation. The syntax of the character learning model is embodied in the product draft developed in the form of lesson plans, worksheets, and character assessment instruments. RPP is a series of learning activities to achieve the specified learning objectives in every meeting. RPP was developed based on the 2013 curriculum with a character learning model adapted to a scientific approach.

Table 3. Expert Validator

Validator Assessment	Relevancy Level	Category
Learning model	Strong	Valid
Lesson Plan	Strong	Valid
Student worksheet	Strong	Valid
UNOMAT Media	Strong	Very Valid

The results of this study indicate that the learning process using the resulting UNOMAT media is included in the good category. UNOMAT fulfills the validity aspect, as indicated by the average validity value of 3.94 (Very Valid). The media fulfills the practicality aspect; it is shown that, as a

whole, all three aspects are carried out with an average observation ($\overline{X}$) = 2.51, with the percentage of agreements being 97.30%. If the average response of the teacher positive response is 90.38% ≥ 75% means that the UNOMAT learning media and learning tools meet the criteria for practicality aspects. And for the effectiveness of the UNOMAT learning media, the average student response was 81.04%, the students stated a positive response to the student activity sheet, and the average student learning outcome test was 82.22 $\geq$ 75 in the complete category because it is greater than the KKM. This learning media can be developed with other materials and can be developed with several improvements,

4. *Disseminate* **(Deployment Stage)**

Character-based learning and critical thinking with UNOMAT media at the final stage of development, then made in the form of UNOMAT cards and learning model books. In addition, UNOMAT media and learning tools are distributed or socialized on a limited basis at the teacher forum at the Daarul Mu'minin Doping Islamic Boarding School. The distribution results found that mathematics teachers responded positively to the development of UNOMAT media and learning tools. This is based on the researcher's positive comments to the subject teacher.

Some special findings that are considered important by researchers to discuss are:

a. Two students do not have UNOMAT during the trial because they did not bring the UNOMAT media that was distributed but got very high learning outcomes above the KKM; on the contrary, some students have UNOMAT media but have low grades.

b. b. 5 students can solve every problem in the UNOMAT media even though the child did not follow the material for two meetings.

c. Some students need help understanding the material using the memorization method in solving problems in UNOMAT media.

CONCLUSION

Character-based learning and critical thinking developed with complete syntax and goals. The learning model must meet the five elements of the model characteristics, namely: (1) syntax, (2) social system, (3) principle of reaction, (4) support system, and (5) instructional impact and accompaniment.

The UNOMATH (Uno Mathematics) media was declared to meet the validity criteria. The validation results by the validator stated that it was very valid. The average student learning outcomes also meet the valid criteria, so it can be said that the uno mathematics media meets the validity aspect.

The UNOMATH (Uno Mathematics) media is declared practical if the media and student learning outcomes tests are used with slight revisions by all validators to use the media in the field. In addition, students' activities in using UNO mathematics media are included in the very good category. So the developed mathematical UNO game media meets the practical aspect.

The UNOMATH (Uno Mathematics) media is effective if the test scores for student learning outcomes are above the KKM and included in the complete category. In addition, the student response questionnaire showed that the student's response was included in the very positive category. So the developed mathematical UNO card game media meets the aspect of effectiveness.

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