# DEVELOPMENT OF DOMINO CARD AS A LEARNING MEDIA IN HUMAN MOTION SYSTEM FOR CLASS VIII MTS STUDENTS

**Moh. Misbakhul Fatikh [1*], Nur Kuswanti [1,2]**
[1] Fakultas Ilmu Pendidikan, Universitas Hasyim Asy'ari, Indonesia
[2] Fakultas Matematika dan Ilmu Pengetahuan Alam, Universitas Negeri Surabaya, Indonesia

*Corresponding Author's Email: akhulfatikh@gmail.com

*Abstract*

*This research is motivated by the difficulty of students in understanding the material of the Human Skeleton System and the teacher has untapped the learning media to the maximum so that learning seems boring and students prefer learning while playing. It needs to development of innovative learning media. This research aimed to produce learning media in the form of Domino Cards on the material of the Human Motion System for students of class VIII MTs / SMP that are appropriate based on validity, practicality and effectiveness. This research is a type of development research using the ADDIE development model which consists of five stages of development namely Analyze, Design, Develop, Implement, and Evaluate. Media trial subjects are 20 students of MTs. Ar-Rohman Laban. The instruments used include the Domino Card media validation sheet, the Domino Card media usage sheet, and the posttest question sheet. The average score obtained from the validator is 3.88 with category "Very Valid". The observation of the implementation of learning shows the percentage of 75% implementation with the category "Practical". Based on posttest data shows an overall average value of 76 with the category of "complete" and an average of 65% completeness with the category "Effective".*

*Keywords: Media development, Domino Card Media, Human Motion System*

## INTRODUCTION

Science is one of the subjects in junior high school that studies nature and its surroundings. Science learning requires a learning media that can make it easier for students to understand the material presented by the teacher, and can involve students to actively participate in learning activities. Therefore, teachers should strive to realize a creative, innovative, effective and fun science learning process, so that the learning atmosphere becomes more conducive. This will be achieved by selecting the right learning media (Rendana, 2018).

Sumiati and Asra (2009) classify learning components into three main categories, namely teachers, content or learning materials, and students. The interaction between the three components involves learning methods, learning media, and structuring the learning environment. This will create a learning situation that allows the achievement of the learning objectives that have been planned. Science learning requires media that involves students directly so that it helps students be more active in learning.

Based on the results of interviews with class VIII science teachers at MTs Arrohman, it was found that the school had implemented the 2013 Curriculum. In the learning process, teachers stated that they used the lecture method more often and less used the media. These two factors make most students less active, tend not to be enthusiastic or less motivated in participating in the science learning process, which makes it difficult for students to understand science material.

In addition, based on the results of the students' questionnaire, they found it difficult to remember the science subject matter, especially about the human movement system. This is due to the lack of student interest in taking science lessons.

The lack of student interest is due to the lack of innovative teaching methods carried out by teachers and teachers have not used appropriate media to make it easier for students to understand the lessons presented. Based on the results of interviews with several students, it shows that some students prefer to learn using image media, especially learning accompanied by games. The students said they prefer to learn while playing.

Media in the learning process has quite an important meaning. The unclear material presented can be helped by presenting the media as an intermediary. Media can be a game. This media can be used as a channel for messages to achieve learning objectives. Learning media must be able to increase student motivation and stimulate students to remember the material that has been studied. Good learning media can make students more active in providing responses, stimulate enthusiastic learning, and encourage more active learning. One

of the learning media is game media. Game media is a learning medium where the players are students who interact with each other by following certain rules to achieve certain goals (Musfiqon, 2012).

The game is an activity that is purely looking for fun without seeking to win or lose. Games are also defined as playing activities carried out in order to seek pleasure and satisfaction, but are marked as winning or losing. Thus, it can be concluded that the game method is a series of playing learning systems by forming group members from different races, cultures, and tribes. The game method prioritizes cooperation in solving problems to apply knowledge and skills in order to achieve learning goals (Hamid, 2014). One way of presenting learning material that is expected to achieve learning objectives is by using learning media in the form of *Domino Cards.*

Cards are a popular game among children, teenagers and adults. Card media is used in learning through a game. Games as learning media involve students in the process of experience and at the same time live up to challenges, get inspired, are encouraged to creatively interact in activities with fellow students in playing this game (Dananjaya and Utomo, 2013).

According to the Kamus Besar Bahasa Indonesia (Sugono, 2008), a domino card is a card with a circle indicating the value of a number. Wardani (2017) states that domino card media is a fun and attractive learning media for students in the form of a rectangle which is divided into two equal segments, namely the right and left segments which contain statements and answers that must be paired on the right card concept with the card concept to the left.

Through the application of learning using this domino card, students can learn in a fun way. This domino card can be applied outside teaching and learning activities, helping to repeat lessons and generating student interest in learning. This Domino Card is a fun medium that can make students active in learning. Domino cards can be classified as an educational game because they are constructive in their simple way of playing. In addition, domino cards, which consist of several interrelated cards, can help make it easier for students to understand and repeat lessons.

Based on the science learning problems that occur at MTs Arrahman, a solution is needed that can solve these problems, namely by implementing fun learning. Therefore, researchers will develop science learning media in the form of games as a form of fun learning.

Based on the above background, further research was carried out with the title " Development of Domino Card as a Learning Media in Human Motion System For Class VIII MTs Students.". The objectives of this study are as follows: (1) to describe the process of developing a Domino Card as a learning media for the Human Motion System material for grade VIII students of SMP / MTs; (2) to describe the feasibility of a Domino Card as a learning media on the Human Motion System material for class VIII SMP / MTs students based on the validation results of the instructional media expert lecturers; (3) to describe the feasibility of a Domino Card as a medium of learning in the Human Motion System material for grade VIII SMP / MTs students based on its practicality; (4) to describe the feasibility of a Domino Card as a learning medium on the Human Motion System material for class VIII SMP / MTs students based on its effectiveness.

## METHOD

This research design uses the ADDIE development model developed by Dick and Carrey (2005), which consists of five stages of development, namely: Analysis, Design, Development, Implementation and Evaluation. In detail, the stages in ADDIE are as follows:
1. Analysis
   The analysis stage includes curriculum analysis, material analysis and student analysis.
2. Design
   The media design stage is carried out by collecting references to learning materials, collecting good learning media references, compiling the material script as a whole, determining the form of Prezi's display developed and evaluation methods..
3. Development
   The development stage was carried out by compiling Prezi's learning media and developing an instrument of validity, practicality and effectiveness testing.
4. Implementation of Trials
   Products that have been revised at the development stage are then tested as media during learning. After testing the product, revisions are then made based on drawback that found during testing.
5. Evaluation
   Evaluation is carried out to analyze the Domino Card learning media developed at each development stage from the analysis stage to the trial stage.

The subjects of the trial for the implementation of the Domino Card learning media were 20 class VIII students who used the One Shot Chase Study data retrieval design.

The data obtained from this research are in the form of quantitative and qualitative data. Quantitative and qualitative data describe the validity of Domino Card learning media obtained from the results of assessments by media experts. The effectiveness of Domino Card learning media is obtained from the posttest results. The practicality of the Domino Card learning media is obtained from the observations of learning implementation..

The data from the expert's assessment of the Domino Card learning media were analyzed qualitatively. The formula used in the calculation is done by calculating the score obtained from the validator with the following formula:

$$\text{Average score} = \frac{The\ total\ score\ obtained}{Number\ of\ aspects\ that\ were\ validated}$$

The rating scale for assessing the Domino Card media is shown in the following table.

Table 1. Assessment Criteria Based on the Likert Scale, adapted from Riduwan (2016)

| Criteria | Score |
|---|---|
| Very good | 4 |
| Good | 3 |
| Pretty good | 2 |
| Less/not good | 1 |

The results of the analysis of the expert assessment sheet are used to determine the quality of the Domino Card learning media by using the interpretation of the scores below.

Table 2. The criteria for interpreting the scores of the media validation results

| Average Score | Criteria |
|---|---|
| $0 \leq x < 1$ | Less valid |
| $1 \leq x < 2$ | Pretty valid |
| $2 \leq x < 3$ | Valid |
| $3 \leq x \leq 4$ | Very valid |

x : expert validation score (modification of Sugiyono, 2016)

Based on these criteria, the developed Domino Card learning media is declared valid if the average score obtained is $\geq 2$. The analysis of the implementation of the Prezi learning media is calculated by the following formula:

$$\text{Learning implementation (LI)} = \frac{The\ total\ score\ obtained}{Maximum\ number\ of\ scores}$$

Learning implementation is assessed using the Guttman scale, with a scale of 1 = yes and a scale of 0 = no. The learning implementation obtained is then classified in the criteria in Table 2 below:

Table 3. The Score Criteria for the Results of the Analysis of the Implementation of Using the Domino Card Learning Media

| Learning Implementation (%) | Criteria |
|---|---|
| $0 \leq LI < 20$ | Not practical |
| $20 \leq LI < 40$ | Less practical |
| $40 \leq LI < 60$ | Pretty practical |
| $60 \leq LI < 80$ | Practical |
| $80 \leq LI \leq 100$ | Very practical |

(modified from Akbar, 2013)

The Domino Card learning media developed is practical if the average score obtained is ≥ 60.The student posttest results analysis is calculated using the following formula:

$$\text{Completeness} = \frac{TThe\ number\ of\ students\ who\ completed}{The\ total\ number\ of\ students}$$

The Domino Card learning media developed is effective if students who complete it reach ≥ 60%. The criteria for completeness of students' cognitive learning outcomes are categorized as Table 4 below:

Table 4. Student Completeness Criteria (CC)

| Student Completeness % | Category |
|---|---|
| 0 ≤ CC < 20 | Not effective |
| 20 ≤ CC < 40 | Less effective |
| 40 ≤ CC < 60 | Pretty effective |
| 60 ≤ CC < 80 | Effective |
| 80 ≤ CC ≤ 100 | Very effective |

CC: Completeness Criteria (modified from Riduwan, 2016).

**RESULTS AND DISCUSSION**

The research conducted was a research on the development of the Domino Card as a learning medium in the Human Motion System material for grade VIII students of MTs. This Domino Card development refers to the ADDIE model development procedure which consists of five stages, namely: analysis, design, development, implementation and evaluation.

1. Analysis

The analysis stage shows that students have difficulty memorizing and prefer learning while playing. The curriculum used is the 2013 curriculum and the material that is considered difficult is the human motion system, sub-chapter of the human skeleton system.

2. Design

At this stage, the collection of reference material for the VIII grade Human Skeleton System in the first semester of the 2013 curriculum, reference collection is carried out to determine the parts of the Skeletal System in Humans and the function of each frame. After the reference to the Human Skeleton System material has been carried out, then the reference is carried out for learning media references that are in accordance with the characteristics of students both writing and language. After that, a media plan was made in the form of a Domino Card grid.

3. Development

Making a Domino Card at this stage resulted in draft 1, draft 2 and draft 3. Making draft 1 based on the grid that was arranged in the previous stage. After draft 1 is composed, the supervisor review continues to get suggestions and input to produce draft 2. Then validates draft 2 and gets suggestions and input by the validator. An example of suggestions and input by the validator is the addition of learning objectives to the Domino Card box then revisions are made to produce draft 3 (final draft).
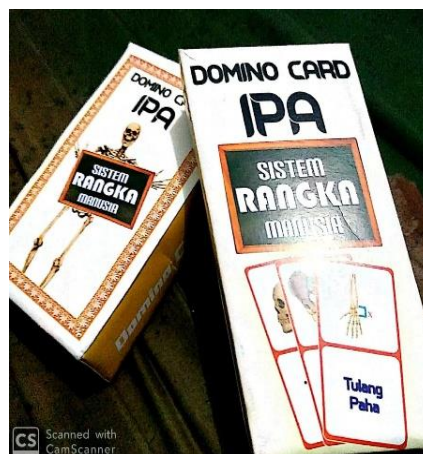

Figure 1. Before the revision

Figure 2. After the revision

4. Implementation

Draft 3 of domino card learning media was tried out on 20 class VIII students to get proper learning media results in terms of practicality and effectiveness.

Research on the development of Domino Card learning media was tested for quality in terms of validity, practicality and effectiveness (Nieveen in Purboningsih, 2015). Validation of Prezi learning media includes media validation and material validation. Media validation was obtained from 2 media expert lecturers and 1 science teacher. Meanwhile, material validation was obtained from material expert lecturers. The validation data on each aspect can be seen in Table 5.

Table 5. Recapitulation of Domino Card Learning Media Validation Results

| No | Rated aspect | Score | Category |
|----|-------------|-------|----------|
| 1 | Media display quality | 3,7 | Very valid |
| 2 | Instructional quality | 4,00 | Very valid |
| 3 | Technical quality | 4,00 | Very valid |
| 4 | Characteristics of Domino Card learning media | 4,00 | Very valid |
| | Average score | 3,88 | Very valid |

In this study, the Domino Card media was validated by expert lecturers. There are several aspects that are validated in the Domino Card media such as aspects of media display quality, instructional quality aspects, technical quality aspects and characteristic aspects of Domino Card media. Based on the results of the validation of the media developed, the validity scores were obtained from each category. The results of the Domino Card media validation can be seen in Table 5. In Table 5, the average score of media validation is 3.88 with the very valid category. The average aspect gets the maximum score because it has fulfilled all aspects of the rubric assessment. The conclusion from the results of the validation of the Domino Card media is that the Domino Card learning media is valid for use. The conclusion from the results of observations of implementation is known that the domino card media is declared "practical" to be used in learning with a percentage of implementation of 75%. The effectiveness of Prezi's learning media can be seen through the posttest results after using Prezi's learning media. The predetermined minimum completeness criteria for science subjects is ≥ 80. Recapitulation of students' posttest results can be seen in Table 6.

Table 6. Student Posttest Results

| | Score | Category |
|---|-------|----------|
| Overall average | 76 | - |
| Completeness | 65 | Effective |

Based on Table 6 it is known that of the 20 students who worked on the posttest questions, 13 students completed with a value ≥ 72 and 7 students who did not complete with a value <72. With an overall average of 76 and completeness of 65. In conclusion, based on the results of the students' posttest scores , it can be seen that the Domino Card media is effective to use.

## CONCLUSION

Based on the results of the research that has been carried out, it can be concluded as follows: (1) Media Domino Card is suitable for use as a learning medium in the Human Motion System material for students of class VIII MTs based on the validation results and instructional media expert lecturers with very valid criteria with a score of 3.88. (2) The Domino Card media is suitable for use as a learning medium in the Human Motion System material for class VIII MTs students based on practicality with very practical criteria as evidenced by the implementation of the use of learning media as much as 96.1%. (3) The Domino Card is suitable for use as a learning medium in the Human Motion System material for class VIII MTs students based on student learning outcomes in the effective category with an overall average score of 76 students and a percentage of student completeness 65. Based on the above conclusions, the suggestions in this study are:

1. Domino card learning media can be used for science learning to make it easier for students to understand the material presented.
2. It is advisable for teachers to develop this product with a wider scope or in other materials, even in other subjects.
3. Evaluation questions should be developed in a more diverse manner.
4. It is necessary to further develop the Domino Card media to improve the quality of science learning at Madrasah Tsanawiyah.

## REFERENCES

Akbar, Sa'dun. (2013). *Instrumen Perangkat Pembelajaran*. Bandung: PT. Remaja Rosdakarya.

Dananjaya dan Utomo. (2013). *Media Pembelajaran Aktif.* Bandung: Nuansa Cendekia.

Dick and Carey. (2005). *Komponen Strategi Pembelajaran.* (online), (http://Komponen strategi pembelajaran/2005/08/17/, diakses tanggal 5 Juli 2019).

Hamid. (2014). Penggunaan Media Kartu Domino untuk Meningkatkan Keterampilan Berhitung Pecahan Siswa Kelas III SDN 2 Kalangan Klaten Tahun Pelajaran 2010/2011". *Berkala Ilmiah Matematika*. 3 (2): 218-227.

Musfiqon. (2012). *Media Pembelajaran*. Cetakan ke-3. Bandung: PT Sarana Tutorial Nurani Sejahtera.

Purboningsih, Dyah. (2015). Pengembangan Perangkat Pembelajaran dengan Pendekatan Guided Discovery pada Materi Barisan dan Deret untuk Siswa SMK Kelas X. *Jurnal Pendidikan Matematika*. 5 (1): 467-474.

Rendana. (2018). *Media Pembelajaran*. Edisi ke-16. Jakarta: Rajawali Pers.

Riduwan. (2016). *Skala Pengukuran Variabel-variabel Penelitian*. Bandung: Alfabeta.

Sugiyono. (2016). *Metode Penelitian Pendidikan Pendekatan Kuantitatif, Kualitatif dan R&D.* Bandung: Alfabeta.

Sugono, dendy dan Tim Redaksi KBBI PB. (2008). *Kamus Besar Bahasa Indonesia (Edisi Keempat)*. Jakarta: Pusat Bahasa Departemen Pendidikan Nasional.

Sumiati dan Asra. (2009). *Metode Pembelajaran*. Bandung: CV. Wacana Prima.

Wardani, Desty (2017). *Pengembangan Media Kartu Domino Modifikasi pada Pembelajaran IPA Materi Struktur Akar Dan Batang Tumbuhan Untuk Siswa Kelas IV sekolah Dasar.* Skripsi. Yogyakarta: Universitas Sanata Dharma.