

# The Development of Domino Nusantara Conservation Media for Students IV Grade Elementary School of Purwoyoso 01 Semarang

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## Abstract

This research is motivated because the result of student learning in sosial studies is lower than other lesson. It's happen because unoptimal to use learning media, then still centered on teachers, lack of model variation and methods in learning, low enthusiasm of student. The formulation of the problem in this research is how the development, feasibility and effectiveness of Donat Conservation as a learning media to improve the learning result of sosial studies in the cognitive domain in the fourth grade elementary school of Purwoyoso 01 Semarang. The research aims to develop learning media, know the feasibility of media, and to know the effectiveness of Donat Conservation media on the learning results of IPS in the cognitive domain for Cultural Diversity of Nations matter in the fourth grade elementary school of Purwoyoso 01 Semarang. This research type is Research and Development (R and D) with Borg and Gall model. Data analysis techniques, including product data analysis, preliminary data analysis and final data analysis. The results show that the percentage gained from material experts is 89% (very feasible) and the percentage gained by media experts is 84.7% (very feasible). Results of small group experiments have improved with the acquisition of understanding in moderate criteria. It is also shown on the average posttest result of large group, that is 88,67, compared to average pretest which only 69,67 with acquisition of understanding in medium criteria (N-Gain = 0,63). And the result of t test is 21,651 which means there is difference of learning result with positive response from student and teacher. So it can be concluded that Donat Conservation media is feasible to be used and effective to improve the result of sosial studies in cognitive domain.

Keywords: conservation, development, domino nusantara, media, grade IV.

## 1. INTRODUCTION

Education is an attempt to perform a learning process with regard to the knowledge, attitudes and skills through training, teaching or research that is usually accompanied by an educator or done by itself that directs a person to be human personality in accordance with the existing values. As described in Law No. 20 of 2003 on National Education System in article 1, paragraph 1 states that education is a conscious and deliberate effort to create an atmosphere of learning and the learning process so that students are actively developing the potential for him to have the spiritual power of religion, self-control, personality, intelligence, noble character, and skills needed him, society, nation and country

Learning is a process attempts by individuals to obtain a change in behavior that is new in its entirety, as a result of the experience of the individual in interaction with the environment ( Slameto, 2013: 2). A learning process can be said to be successful if special instructional objectives (ICT) was achieved. So we need a good planning on doing the learning. The use of the medium used is also noteworthy. The media interpreted integral part of the learning process in order to achieve the goals of education in general and learning objectives in schools in particular (Arsyad, 2014: 2). Media can

be used as tools and learning resources. In the media selection needs to consider several factors one of which is the target of the program (Djamarah, 2013: 121).

One medium that can be used in social studies is dominoes. Dominoes fall into graphic media types of visual media, namely instructional media that transmits a message via the senses of view / vision. The message conveyed poured in visual communication symbols (Sukiman, 2012; 85-87). Dominoes will be presented in a game so as to make students more interested. Dominoes is a game system has been recognized by the public. Dominoes is generally a card made of thick paper ordinary small-sized rectangular and on each card is divided into two parts of the field with each field has a value determined by the number of digits in the sphere. But the game of dominoes in this study is different from usual domino game. Domino game that used to have some variation by lifting elements UNNES conservation among sewage treatment, paperless policy and cultural conservation (Tim MKU UNNES, 2014: 40-41).

Initial observations conducted by researchers showed that learning social studies in grade IV SDN Purwoyoso 01 Semarang less optimal. In the implementation of learning, the absence of a supporting medium for conveying the material, less optimal utilization of available media, learning is

still centered on teachers and learning resources focusing only on the book. So that students are less enthusiastic in participating in lessons and can not understand the material very well. These problems result in lower social studies and the results were below the minimum completeness criteria (KKM) is 70. By archives value fourth grade students of Purwoyoso 01 Semarang indicate that IPS had a mean value of 67.76. Fourth grade students are 39 students. Values on the cognitive indicate as many as 20 students or 51.28% of the students are under the KKM.

Research conducted supported by previous studies such as research conducted by Farid Ahmadi in 2014 under the title "The Effect of Jarimatika Multimedia in Counting Ability of Children" which proves that the posttest learning implementation using "Jarimatika" multimedia-based learning more as high as the pretest. The study also reinforced by the relevant research ever undertaken Sri Muryaningsih 2015 under the title "Math Games Domino Effect On The Results Of The Learning Math fractions In Class IV SD Negeri 1 Kalikabong" which indicates that there is the influence of dominoes fractions on learning outcomes aspects cognitive and psychomotor. And the research by Lucky Dwi Larasati 2016 under the title "Development of Chemical Domino Card Games as the Creative Learning Media Elements for Students SMALB". The results showed that the card game Domino Chemistry fit for use as a medium of learning chemistry on the material elements for students SMALB.

Judging from some of the benefits of media use dominoes then it is appropriate to be used as a media dominoes in social studies materials Nation Cultural Diversity theme togetherness in the fourth grade. Based on this background, researchers interested in conducting research in the cognitive with the title "Development of instructional media Domino Nusantara (Donat) Conservation to improve cognitive learning outcomes of IPS". Case Study: Students of Class IV Purwoyoso 01 Semarang. This study aims to (1) develop Donat Conservation as a medium of learning to improve learning outcomes cognitive of IPS on material Nation Cultural Diversity fourth grade Elementary School of Purwoyoso 01 Semarang, (2) Examine the feasibility of Donat Conservation as a medium of learning to improve learning outcomes IPS cognitive matter Diversity Nation culture grade IV Elementary School of Purwoyoso 01 Semarang, (3) Testing the effectiveness of Donat Conservation of cognitive learning outcomes of IPS in Nation cultural Diversity material grade IV Elementary School of Purwoyoso 01 Semarang.

## 2. METHODS

This study included in this type of research and development. Research development is defined as a systematic review of how to make the design of a product, develop / produce the draft, and evaluate the performance of these products, with the purpose can be obtained data empirical that can be used as a basis for making the products, tools and models that can be used in teaching or non teaching. The steps in this research as shown in Figure 1 below, namely: (1) the potential and problems; (2) data collection; (3) the design of the product; (4) design validation; (5) revision of the design; (6) product trials; (7) the revision of the product; (8) utility testing; (9) the revision of the product; (10) mass production. Researchers adapted the Borg and Gall development models for each step in the research are translated accurately. So the researchers focused on conducting research and development to get the desired results in accordance with (Sugiyono, 2015: 409).

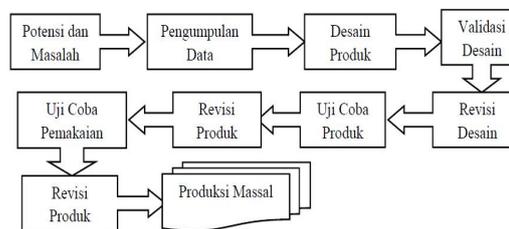


Figure 1. Steps Model Borg and Gall (Sugiyono, 2015: 409)

Subjects in this study consisted of students, teachers, specialists or experts and researchers. The technique of collecting data using interviews, documentation of data, questionnaire, and test. On Conservation Donat products do due diligence covering feasibility matter experts and media, as well as through the responses of teachers and students. Furthermore, for data analysis, including analysis of product data, data analysis beginning with normality test, and final data analysis to test N-gain and samples paired t-test aims to determine the effectiveness of media Donat Conservation of learning outcomes IPS (Social Studies) on material Nation Cultural Diversity.

## 3. RESULTS AND DISCUSSION

### 3.1 Product Design

Needs analysis questionnaire results showed that the desired learning method in teaching materials Nation Cultural diversity is lectures, discussions and games. To display the desired culture of pictures, drawings, writings, writings. Conservation Donat card size is 4x8 cm with a cartoon. Culture on the card Donat served more than three colors and colors background cards more than

2 colors. In the game there Conservation Donat card board game with a size of 32x48 cm and the base color of this game more than two colors. Conservation donut card using letter Axis Komixa with a medium size (7). Dark colors in the picture captions culture. Conservation Donat card played by the rules that are fixed and for students who will be eligible for prizes, the students who lost will be punished. At the end of the lesson will be held evaluation with multiple choice questions.

The results of the needs analysis questionnaire given to teachers, show that teachers choose to use a variety of learning methods in between lectures, discussions and games. Views varied culture, ie images, drawings, text or otherwise, and writings. Furthermore, for teacher card sizes choose the size of 4x8 cm and with a cartoon. Culture in Conservation Donat card also expected to be presented with more than 3color and background cards more than two colors. For the teacher board size choose size 32x48 cm with attractive colors and diverse. The selected letter is Komixa Axis with a size 7 and a dark color. The game is also expected based on the needs analysis will be used as guidelines in making learning media. This is consistent with the explanation M. Taufiq in his journal, entitled "Development of Integrated Science Learning Media Environmental Care Character Themes Conservation Science-Edutainment" so that the media developed appropriate and well targeted. Conservation Donat media design includes cover design point of the game, game board design, business card design front, rear card design, the design of the card, and design guide books. Conservation Design nuanced nationalism Donat media, because the media relating to the material Nation Cultural Diversity. The design was then translated into a product in the form of conservation Donat media.

### 3.2 Results Products

Results for the product is the stage where the design is translated into a real learning media. Researchers made the Conservation Donat media design using Corel Draw X7. In addition to software, the researchers also need materials such as waste paper as a former printing place and the media suttlecock as a whole former Donat Conservation media. The following examples of products Donat Conservation.



Figure 2. Design and Products of Donat Conservation

Products that have been produced will then be tested the feasibility of the subject matter experts. Subject matter experts give a total score of 43. The results of the acquisition score then the score will be converted into a percentage. The percentage obtained by 89%. And the result falls within the criteria very feasible to use. Of subject matter experts to suggest improvements to the manuals, evaluation questions and multiple choice in the matter of evaluation. With the revision, the researchers make improvements to the evaluation questions. Furthermore, the evaluation questions are tested on students at the next level up. At the trial researchers enrolled students of class V Elementary School of Purwoyoso 01 Semarang. From the results of their work were then tested the validity, reliability, power and the level of difficulty depending matter. After the researchers chose questions that have met the criteria to be used in the evaluation of learning about the pretest and posttest.

Products that have been produced will also be tested the feasibility of the subject matter experts. Assessment of media experts give a total score of 78. The results of the acquisition of the score is the score will be converted into a percentage. The percentage obtained for 84.7%. And the result falls within the criteria very feasible to use. From media experts advise to make revisions on the back cover and guide books division Conservation Donat card series. Revised rear cover associated with the writing and the color background is less harmonious books that make writing less clear to read. While in the card series, with regard to the number of cards is not the same for each series, so the researchers transformed the card series originally consisted of 3 series then converted into 2 series.

### 3.3 Results Testing Products

Products which have become further test small group of 9 students. The small group trial conducted twice learning is learning pretest and learning posttest. Learning is done in a separate library for the students who will be the subject of a large group. The goal is to separate students as subjects in a large group to know the groove and the media, because it will affect the initial conditions of students. On the learning pretest student using a regular image media, while at the posttest students using Conservation Donat media. At the end of the evaluation of learning both work on the problems. The results of the evaluation of learning pretest and posttest in small groups are shown in Table 1.

**Table 1.** Results of Evaluation of Learning pretest and posttest Small Group

Learning	Lowest	Top	Average	Percentage
	Rated	Value		Complete
Pretest	55	85	73.89	77.78%
Posttest	80	100	90.5	100%

Table 1 shows that the learning pretest lowest score was 55 and the highest is 85 with an average of 73.89 and a percentage of 77.78% completeness. While on the learning posttest lowest score was 80 and the highest was 100 with an average of 90.5 and the percentage of completeness 100%. It shows differences in cognitive learning outcomes of students before and after uses the media, and the result of evaluation on learning posttest. higher than pretest.

Having successfully applied to a small group, then media Donat Conservation would be applied in a large group. In a large group of students were 30 who sequentially formed into 5 groups. Students who have been involved in a small group is not allowed to participate in learning in large groups because previously they have been getting the same material. The treatment given to large groups as well as small groups. Will be performed learning pretest and posttest. At the end of the lesson will be given about the evaluation. Here are the results of the evaluation in a large group.

**Table 2.** Learning Evaluation Results pretest and posttest Large Group

Table 2 shows that the learning pretest lowest score was 50 and the highest is 85 with an average

Learning	Lowest	Top	Average	Percentage
	Rated	Value		Complete
Pretest	50	85	73.89	60%
Posttest	75	100	90.5	100%

of 73.89 and a percentage of 60% completeness. While on the learning posttest lowest score was 80 and the highest was 100 with an average of 90.5 and the percentage of completeness 100%. It shows the results of evaluation on learning turns posttest higher than pretest. It is similar to a study conducted by Carmen Brankaer, Pol Ghesquiere, and Bert De Smedt in 2015 under the title "The Effect Of A Numerical Domino Game On Numerical Magnitude Processing In Children with Mild Intellectual Disabilities" with the results of the children who play the game numerical domino experienced significantly faster when posttest compared to pretest on symbolic comparison task.

### 3.4 Data Analysis

Analysis Data were done with the test for normality by formula. the Shapiro-Wilk Normality Calculations performed with SPSS version 21. Normality test results on a small group pretest reaches 0.231 posttest reached 0.595. While a large group of normality test on the pretest reaches 0.379 posttest reached 0.092. All these results show the value of more than 0.05 and normality curve shaped like an inverted bell. This means that the normal distribution of data and can be continued for the next calculation.

The results of value pretest and posttest in small and large group followed by test N-Gain to determine the success of the students' understanding of the concept. Results N-Gain small groups and large groups are shown in Table 3.

**Table 3.** Results N-Gain Small Group and Large Group

Group	Total Score pretest	Total Score posttest	scores Maximum	Gain
N-Small	665	815	900	0.64
Large	2090	2660	3000	0.63

Table 3 shows the N-Gain large groups and small groups. The small group shows a total score of 665 pretest and posttest total score 815 with a maximum score of 900, the obtained N-Gain 0.64 which are in the middle criteria. And a large group showed a total score of pretest posttest in 2090 and 2660 with a total score of a maximum score of 3000, the obtained N-Gain 0.63 which are in the middle criteria.

In addition to calculating the N-Gain also performed t test. T test aims to determine whether there are differences in learning outcomes or not before and after using Donat Conservation. Calculations performed with SPSS version 21 and obtain data sig (2-tailed) 0.000. It means that sig (2-tailed) 0.000 < 0.05. And (21.651) > (2.045). So we can conclude there are differences in learning outcomes IPS Nation Cultural Diversity materials before and after using instructional media Conservation Donat.

Seeing these results, it can be concluded that the conservation Donat effective against cognitive learning outcomes IPS materials Nation Cultural Diversity at the fourth grade students of Elementary School of 01 Purwoyoso Semarang.

### 4. CONCLUSION

The conclusion of this research is Developing a learning medium IPS Donat Conservation has

conducted research in several stages according to the model designed by Sugiyono covering the steps of the potential and problems, data collection, product design, design validation, the revised design, product testing, product revision, utility testing, and product revision of Conservation Donat. Data collection Data collection was done by using interviews, questionnaires, and documentation data lists the value of the Grade IV Elementary School of Purwoyoso 01 Semarang and analysis needs. At the stage of product design, the researchers used a prototype. Then proceed with design validation by experts and media materials, revised and continued testing of products in small groups and continued with a big group test.

Feasibility study media products developed is determined through the validation by subject matter experts and media, as well as a small group of test results. Based on the evaluation by experts materials, products gain eligibility with a percentage of 89%, which means very feasible and by media experts get a score of eligibility with a percentage of 84.7%, which is very decent. In a small group of test results obtained by an increase in social studies achievement after using the media with an understanding of 0.64 were included in the criteria.

Results of experiments in classroom samples showed an average pretest (before using the media) is 69.67, while the average posttest (after using the media) is 88.67. After using the media to achieving an understanding of 0.63 are included in the medium criteria. According to test calculations paired t-test produced 2-tailed sig 0.000 < 0.05 and  $(21.651) > t_{table} (2,045)$ , it can be concluded if the Conservation Donat instructional media have a significant influence on the results of social studies grade IV Elementary School of Purwoyoso 01 Semarang. The learning outcome to prove if there is a difference between the results of social studies before and after using instructional media of Donat Conservation.

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