
Research Article**“Edu Game Monopoly” Media Development On Sosial Arithmetic Material Of Junior High School****Umi Chanifah¹, Iskandar Wiryokusumo², Djoko Adi Walujo³**^{1,2,3}Postgraduate University PGRI Adi Buana Surabaya

Abstract: The purpose of this research is to develop a decent monopoly edugame media product on social arithmetic material with the concept of learning while playing. To support media feasibility, process of media expert validation, material expert validation, teacher response and student trials are conducted. The feasibility assessment includes three aspects: the aspects of media engineering, social communication aspects and learning aspects. The research method used is research and development of R & D, Borg and Gall model that has been modified into five stages consisting of (1) requirement analysis stage, (2) planning stage, (3) early product development stage, (4) validation and trial stage, and (5) final product stage. The results of research and development shows that: Assessment of feasibility in terms of the above three aspects have been obtained percentage of 90.3%. In accordance with the conversion table of achievement level on a scale of 5, the value is obtained with the qualification of "Very Good". Thus, it can be concluded that the development of monopoly edugame media in this study is "Eligible" to be used as a medium of learning on the social arithmetic material of Junior High School.

Keywords: media, edu game monopoly, social arithmetic.

Introduction

In learning mathematics, understanding the concept is the main thing that must be mastered by students before completing the problems and apply into everyday life. It is not easy for students to understand a mathematical concept. This is because the ability of each student is different. Nevertheless, it is necessary to improve the understanding of mathematical concepts in order to achieve student success in learning. Relevant to the research done by Fachrudin, Ratu Ilma & Darmawijoyo (2018) by understanding the concept of mathematics, this provides a better way of building students' knowledge of mathematics.

To overcome these problems, it takes the role of teachers in planning and implementing learning. Teachers are required to design learning with appropriate strategies and able to make students as subjects. In the attachment of the Minister of Education and Culture Ministerial Regulation No.58 of 2014 on the curriculum of JHS/MTs which is the development of the 2013 curriculum with the improvement of mindset such as (1) the learning process of student-centered mathematics, (2) strengthening the interactive learning pattern (teacher, natural environment, source / media), (3) active-looking learning pattern. The concept of the 2013 curriculum emphasizes a meaningful student learning experience by exploring the knowledge gained from various learning resources in the neighborhood.

Based on experience and direct observation at the time of learning mathematics from class VII to class IX, there are facts that indicate a gap between hope and reality, in the sense that existing conditions in the field is not in accordance with ideal conditions expected. For example, learning is still focused on teachers, students are less actively involved so that

learning takes place monotonously and unpleasantly. The situation is coupled with the use of less than optimal media. From these facts, all this leads to a passive and tedious learning situation that often gets some students who fall asleep in class, while others chatted with their own friends. This can illustrate the importance of a medium that should be designed by teachers to facilitate the achievement of learning objectives in an effective and efficient way.

One of the elements that support the effectiveness in understanding the concept of learning mathematics is the medium of learning. AECT (in Arsyad, 2015: 3) describes the media as all forms and channels used to convey messages or information. This is in accordance with what is delivered Kurniasih and Sani (2017: 19), they stated that the medium of learning is an intermediary to the message message from the messenger to the recipient of the message so that the interaction occurs. It is also stated that the media is a tool, both in the form of human, material, events that can build conditions so that students are able to acquire knowledge, skills and attitudes according to Gerlach and Ely (in Hamdani, 2011: 243). It is highly relevant to research (Dwijayani, 2017) that the diversity of students with visual, auditory and kinesthetic learning types will gain the same experience using a medium in the learning process. Meanwhile, according to Aqib (2015: 50), he stated that the learning media is everything that can be used to channel the message and stimulate the learning process in the students. The media in general are all teaching tools that are used to assist teachers in delivering learning materials to students in the learning process so as to facilitate the learning objectives that have been formulated (Rohman and Amri, 2016: 196).

Media is an integral part in the implementation of teaching and learning process used to achieve learning objectives. According to Arsyad (2015: 35), he quotes from the opinion of Seels & Glasgow grouping various types of media in terms of technological developments of traditional media and advanced media technology. The types of media that fall into traditional media groups are:

- a. Visually silent projection, including opaque projections, overhead projections, slides, filmstrips.
- b. Visuals that are not projected include images, posters, photos, charts, graphs, diagrams, exhibits, info boards, board-feathers.
- c. Audio includes recordings of disks, cassette tapes, reels, cartridges.
- d. Multimedia presentations include, plus slide (tape), muliti-image.
- e. Dynamic visuals projected include movies, televisions, videos.
- f. Print includes text books, models, programmed text, workbooks, periodical scientific magazines, hand-outs.
- g. Games include puzzles, simulations, board games.
- h. Realia includes model, specimen (example), manipulative (map, doll).

Learning media is very potential in the process of learning mathematics which one of them is the game media. According to Walker (2017: 68), he stated that the game is a way that is done actively, fun and without pressure to strengthen relationships. Fun learning can be used by teachers to improve student achievement in learning. Through the game, this method not only develops the core of the lesson but also the aspects of social skills, discipline, competition, speed, learning to take the dedication can be achieved at once.

According to Piaget, the stage of playing a child has four sensory motions (pre-operational), preoperational (before age 2-7 years), concrete operations (between 7-12 years of age), formal operations (age above 12 years old). Based on the stage of development of the play, junior high school students are at the stage of development of formal operations one of them is the game playing cards, pictures, objects and monopoly. These games are a tool that teaches students to have the ability to determine the strategies used in solving problems. Game media in the process of learning mathematics is used as a tool to present the material with a pleasant atmosphere so as to stimulate students' intelligence.

This research begins with the requirement analysis phase obtained through questionnaire in the form of questionnaire. Questionnaires were distributed to 102 students as a sample of 252 students of grade VII State 1 MTs of Surabaya. From the results of the questionnaire, obtained a result of 79.41% of students who want the media fun and involve students actively in the form of a media game or media edugame. Based on these facts, researchers conducted the development of media Monopoly Edugame as one solution to overcome the existing problems. This fact is very relevant to Maya Siskawati research (2016), Astuti (2015), Afifurrahman (2015) which is suggesting the use of monopoly game media developed with the concept of play which can be used as one of solution in

teaching learning process problem.

Learning by playing can also minimize boredom, stress, and invite students to be actively involved during the teaching and learning process. The hope of using this Monopoly Edugame media is to provide a fun and meaningful learning experience for the students as well as to master the material presented. Social arithmetic material is poured in the form of a matter contained on colored cards placed on the plots of Monopoly Edugame in the hope that students play at once can understand the social arithmetic material in an interesting way. Therefore, the purpose of this product development research is to produce media edugame decent monopoly on social grade arithmetic materials VII Junior High School so that can be used as an alternative media to facilitate teachers in delivering messages to students in order to support the achievement of learning objectives.

Methods

This development research was conducted in the even semester of the academic year 2017/2018. The subjects in this study are students of class VII MTs Negeri 1 Surabaya and students of class VII MTsN III Surabaya City. This research uses R & D, research and development of Borg and Gall model that has been modified from ten stages to five stages consisting of: (1) requirement analysis stage, (2) planning stage, (3) initial product development stage, 4) the validation and trial stage, (5) the final product stage.

The reason for the use of R & D research and development is that each step is clearly described and illustrates the overall interconnected concept of each step making it easier to implement. And the reason for the modification of the ten steps or stages into five stages due to limited time and funds.

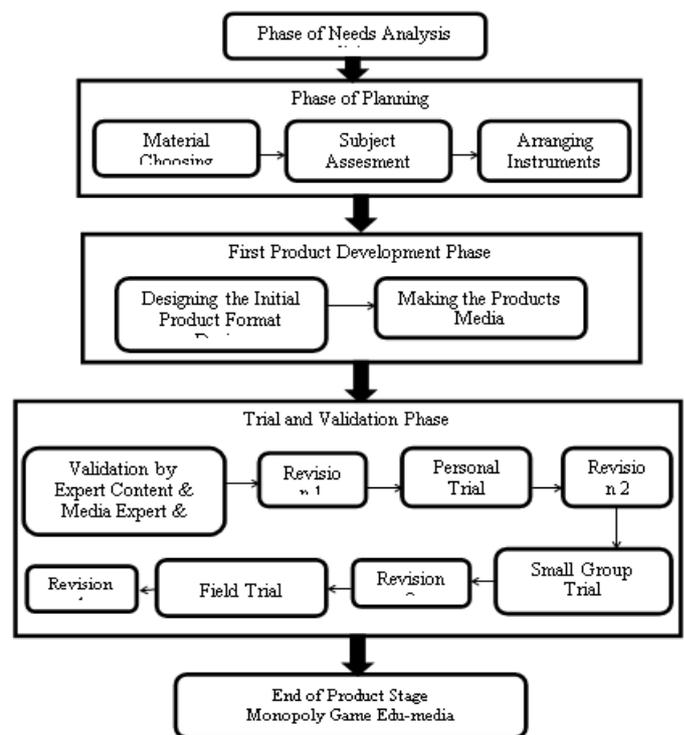


Figure 1. Chart of Progress Monopoly Edugame Media Procedure

In the requirement analysis phase, the first step in this step is to collect materials or information about the media required by the students so that the learning objectives can be achieved. To get the data students are given a questionnaire in the form of questionnaires. The results of the questionnaire were used as preliminary data in designing effective media development.

In the planning stage, the basic election of mathematics subjects of social arithmetic materials to be developed. The subjects of mathematics are chosen because according to the competence of the author and the selection of social arithmetic material is because the material discusses matters related to daily activities. Although this discussion is about daily activities that are very close to the activities of students, but still found many students who have difficulty in mastery of social arithmetic material. There are many factors that cause it to happen, one of which is because the teacher still less actively involved students and the lack of utilization of learning media. Next is to review the social arithmetic material in accordance with current curriculum guidance, which is the revised 2016 edition of 2017 curriculum.

In this initial product development stage, the first thing to do is to design the initial product format design tailored to the needs and materials that have been reviewed in consultation with material experts and media experts then make Monopoly Edugame media products in accordance with predefined format.

Validation and Testing Stages, at this stage the media Monopoly Edugame is validated by the material experts and media experts who produce results in the form of suggestions, inputs and comments which are then used as a basis for revision of the media developed. Then the response from peers or teachers, from suggestions and subsequent inputs is used as a basis for conducting trials of media products on students. The design of this product trial consists of three steps:

- a. Individual trials conducted on 5 students as users of the product, then from feedback and suggestions used to make revisions.
- b. limited trial was conducted in a small group of 10 students as a product user, based on responses and inputs to be revised.
- c. The Field Trial was conducted on 33 students, based on responses and inputs made revisions to improve the product.

In this final product stage, product monopoly edugame media has been improved and revised based on field trial results.

Data Collection Techniques and Instruments

The data collected in this research is qualitative and quantitative data, namely: (a) Qualitative data is data about media development process of Monopoly Edugame in the form of critic and suggestion from media expert and material expert. (b) Quantitative data is data in research in the form of assessment data about media Monopoly Edugame from material experts, media experts, teachers and students.

The instruments used to collect data are questionnaires. The questionnaire is a data collection technique in which respondents fill in questions or statements given by

researchers (Cristensen in Sugiono, 2015: 216). In line with the opinion of Sugiono (2011) which states that the questionnaire is a technique of data collection conducted by giving a set of questions or written statement to the respondent to answer. The questionnaire instrument in this development study was used to obtain data from material experts, media experts, teachers and students as a material to evaluate the developed monopoly edugame media. The feasibility instrument on Monopoly Edugame media using Likert scale with five alternative answers (Sugiono, 2015: 165) is: very good, good, enough, less and very less. For the purposes of quantitative analysis, each alternative answer is given a very good score = 5, well = 4, enough = 3, less = 2, very less = 1. The formula used to calculate the percentage of each subject is:

$$\text{Percentage} = \frac{\sum X}{SMI} \times 100\%$$

Information:

$\sum X$ = total of score

SMI = Maximum Ideal Score

To calculate the percentage of all subjects used the formula:

Percentage = F: N

Information:

F = the total percentage of the subjects

N = number of subjects

Qualitative interpretation and decision making are used for conversion of achievement level on a scale of 5.

Table 1. Conversion Level Achievement by Scale 5

No	Achievement Level	Qualification	Information
1	90% - 100%	Very good	No revisions needed
2	75% - 89%	Good	Revised as necessary
3	65% - 74%	Enough	Quite a lot of revisions
4	55% - 64%	Less	Many revisions
5	0% - 54%	Very less	Total revised

Source : (Tegeh, Jampel, & Pudjawan, 2014)

To determine the quality of media product developed feasible or not, then used the minimum criterion of assessment of "B" which included good category. If the assessment of media products at least get the value of "Good", then the media product developed is "Eligible" is used as a medium of learning.

Results and Discussion

Product Development Results

In this study, the end result of media products is Monopoly Edugame media on social arithmetic material. The product of Monopoly Edugame media development has been through the validation stage of material experts, media experts, assessment of teachers or peers, individual trials, small group trials and field trials. The stages are conducted with the aim to obtain assessment, suggestions, comments and inputs so that media products developed meet the feasibility. The review of the

feasibility of developed media products consists of three aspects: the aspects of media engineering, the aspects of visual communication and learning aspects.

Of all the steps that have been done is the expert validation stage and test phase against edugame media developed this monopoly. positive response was obtained.

Table 2. Data Result of Media Feasibility Monopoly Edugame from Aspect of Learning

No	Scoring Phase	Percentage (%)	Qualification
1	Master of Materials	92%	Very good
2	Teachers	91%	Very good
3	Individual Trials	91,7%	Very good
4	Small Group Trials	91,5%	Very good
5	Field Trial	87,2%	Good

Based on the result of feasibility assessment of Monopoly Edugame media from the learning aspect in the table, the result of the material expert assessment is 92%, in accordance with the conversion of the level of achievement of scale 5 which get the criteria with the qualification "very good. Assessment from the teacher or colleagues is 91% with a "very good" qualification. And the results of the assessment obtained at 91.7% individual testing with "very good" qualification, small group trial of 91.5% with "very good" qualifications are being assessed during field trial of 87.2% with a "good" qualification.

Table 3. Data on Media Feasibility Assessment of Monopoly Edugame from Aspect of Media Engineering

No	Scoring Phase	Percentage (%)	Qualification
1	Master of Materials	91,1%	Very Good
2	Teachers	93%	Very Good
3	Individual Trials	89%	Good
4	Small Group Trials	86,4%	Good

The data shows a feasibility assessment of media engineering aspects obtained from media experts of 91.1% with "very good" qualifications. While at the individual trial, 93% was obtained with a "very good" qualification, followed by small group trials, 89% with "good" qualifications. And the value obtained during field trial is 86.4% with "good" qualification.

Table 4. Data Result of Media Feasibility Monopoly Edugame from Aspect of Visual Communication.

No	Scoring Phase	Percentage (%)	Qualification
1	Master of Materials	87,5%	Good

2	Teachers	93,4%	Very Good
3	Individual Trials	92%	Very Good
4	Small Group Trials	87,8%	Good

In accordance with the results data table, the judging appraisal of media Monopoly Edugame conducted by media experts amounted to 87.5% with a "good" qualification. And the scores obtained in the individual test phase were 93.4% with "very good" qualifications, the assessment during the small group trial scored 92% with "very good" qualifications, while on field trials, the value obtained 87.8% with "good" qualification.

Feasibility of Media Learning

Learning media development products can be said to be feasible based on feasibility tests consisting of expert material validation test, media expert validation, teacher or peer assessment and student testing. The development of Monopoly Edugame media on social arithmetic material of this assessment includes three aspects of media engineering aspects, aspects of visual communication and learning aspects. If the assessment given by the material expert, media expert, teacher or peers and the response of the students at each stage of the trial gets a minimum score with the "Good" criterion then the learning media can be said to be "Eligible" for use in learning.

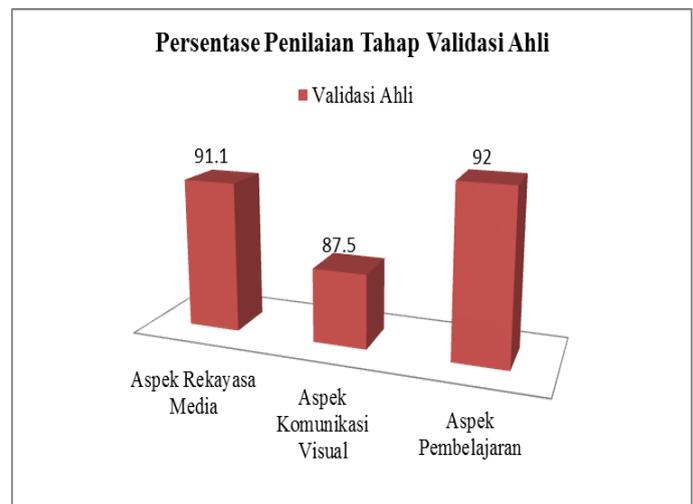


Figure 2. Graph of Experimental Validation Results on Media Egamo

From the graph, it can be seen that the results of expert validation, both media experts and material experts to media edugame monopoly from the aspect of media engineering, visual communication aspect and learning aspect obtained the average percentage of 90.2% in accordance with the conversion table has criteria with qualification "very good"

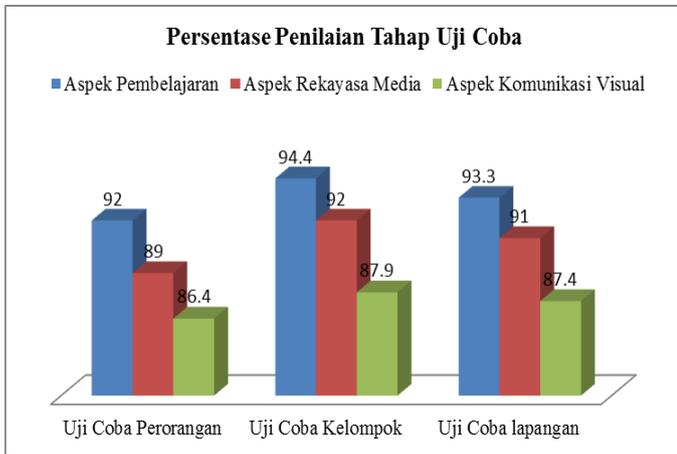


Figure 3. Charts of Egamo Media Test Results

Based on the graph, obtained the results of the assessment in the test phase of individual testing, small group testing and field testing, assessment of learning aspect average percentage of 93.2% with the qualification of "very good", Medium assessment of media engineering aspects obtained average percentage of 90.6% with "excellent" qualifications and average percentage of 87.2% with "good" qualifications from visual communication aspect assessment. From the assessment of these three aspects, it can be calculated the percentage of all subjects by 90.3%.

From the final result of assessment of expert validation stage and test phase that has been done, can be calculated percentage of whole subject by using formula formula:

$$\begin{aligned} \text{Percentage} &= F : N \\ &= (90.2 + 90.3) \% : 2 \\ &= 90.26\% \end{aligned}$$

Information:

F = the total percentage of the subjects
N = number of subjects

From the calculation result, obtained the average percentage of 90.26%. If converted into a table of scale 5 then obtained the criteria with the qualification of "very good". Thus, it can be concluded that the development of egamo media (edugame monopoly) in this study has been "Eligible" is used as a medium of learning on social arithmetic material of grade VII students of junior high school.

Conclusions and Suggestions

Conclusion

Based on the results of data presentation and analysis of the results of research that has been done about the development of media edugame monopoly on social arithmetic material, obtained the following conclusion:

1. That media edugame monopoly is a conceptualized media in the form of fun game by involving students actively so that can be used as solution to overcome student's boredom on monotonous teaching.
2. Through media edugame monopoly on this social arithmetic material, student character can be formed that is attitude in decision making, strategy arrangement, cooperation, mutual help, and sharing with others.

3. Edugame monopoly media product developed this, monopoly board can be used as a medium of learning on other subjects just by changing the question on the question card tailored to the subjects.
4. Media edugame monopoly on this social arithmetic material has gone through the whole in the stage of feasibility assessment that is material material validation, media expert validation, teacher or peer assessment, individual testing, small group trial and field trials both in terms of aspects of learning, aspects of media engineering and social communication aspects with "Excellent" qualifications and are qualified as "Eligible" media used in learning.

Suggestion

Based on the results of this development research, it is hoped that edugame monopoly media can be used as a reference for other researchers to develop it on other materials. And before using this monopoly edugame media in learning, should give an explanation in advance about the rules of the game and about the importance of the module as a guide in working on the questions contained in the question card.

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