

**THE DEVELOPMENT OF MONOPOLY GAME AS A
LEARNING SCIENCE MEDIA TO INCREASE THE RESULT
OF LEARNING PROCESS AT 5th GRADE OF MI AL MAARIF**

02 SINGOSARI

THESIS

By:

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NIM 10140075



**ISLAMIC ELEMENTARY SCHOOL TEACHER PROGRAM
ISLAMIC ELEMENTARY SCHOOL TEACHER EDUCATION
DEPARTMENT
TARBIYAH AND TEACHING SCIENCES FACULTY
STATE ISLAMIC UNIVERSITY MAULANA MALIK
IBRAHIM MALANG**

June, 2014

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02 SINGOSARI**

THESIS

*Submitted to Tarbiyah and Teaching Sciences Faculty the State Islamic University
(UIN) Maulana Malik Ibrahim Malang in Fulfillment of the Requirement to
Obtain a Bachelor Degree of Islamic Elementary School Teacher Education
(S.Pd.I)*

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APPROVAL SHEET

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SCIENCE MEDIA TO INCREASE THE RESULT OF LEARNING
PROCESS AT 5th GRADE OF MI AL MAARIF 02 SINGOSARI****THESIS**

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DEDICATION SHEET

*Thank You to The People Who Have Always Given
Me The Spirit*

My Father and Mother



MOTTO

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
 فَإِنَّ مَعَ الْعُسْرِ يُسْرًا ۖ إِنَّ مَعَ الْعُسْرِ يُسْرًا ۖ

*Artinya: Karena sesungguhnya sesudah kesulitan itu ada kelapangan.
 Sesungguhnya sesudah kesulitan itu ada kelapangan. (Al Insiroh: 5-6)¹*

¹ Imam Jalaluddin Al Mahalli dan Imam Jalaluddin As Suyuti, *Tafsir Jalalain: Asbabun Nuzul 2* (Bandung: Sinar Baru Algesindo, 2009), page. 1348-1350

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Appendixes : 4 (four) Exemplar

Dear

Dean of Tarbiyah and Teaching Sciences Faculty

State Islamic University Maulana Malik Ibrahim Malang

at

Malang

Assalamu'alaikum Wr. Wb

After carrying out at several times for guidance, both in terms of content, language and writing techniques, and after reading the following thesis:

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Student Number : 10140075

Department : Islamic Elementary School Teacher Education

Thesis Title : **The Development Of Science Monopoly Game As A Science**

Learning Media To Increase The Result Of Learning Process At

5th Grade Of MI Al Maarif 02 Singosari

As the advisor, we argue that the thesis has been proposed and tested decent. So, please tolerate presence.

Wassalamu'alaikum wr. Wb.

Advisor,

Dr. H. Sugeng Listyo Prabowo,
M.Pd

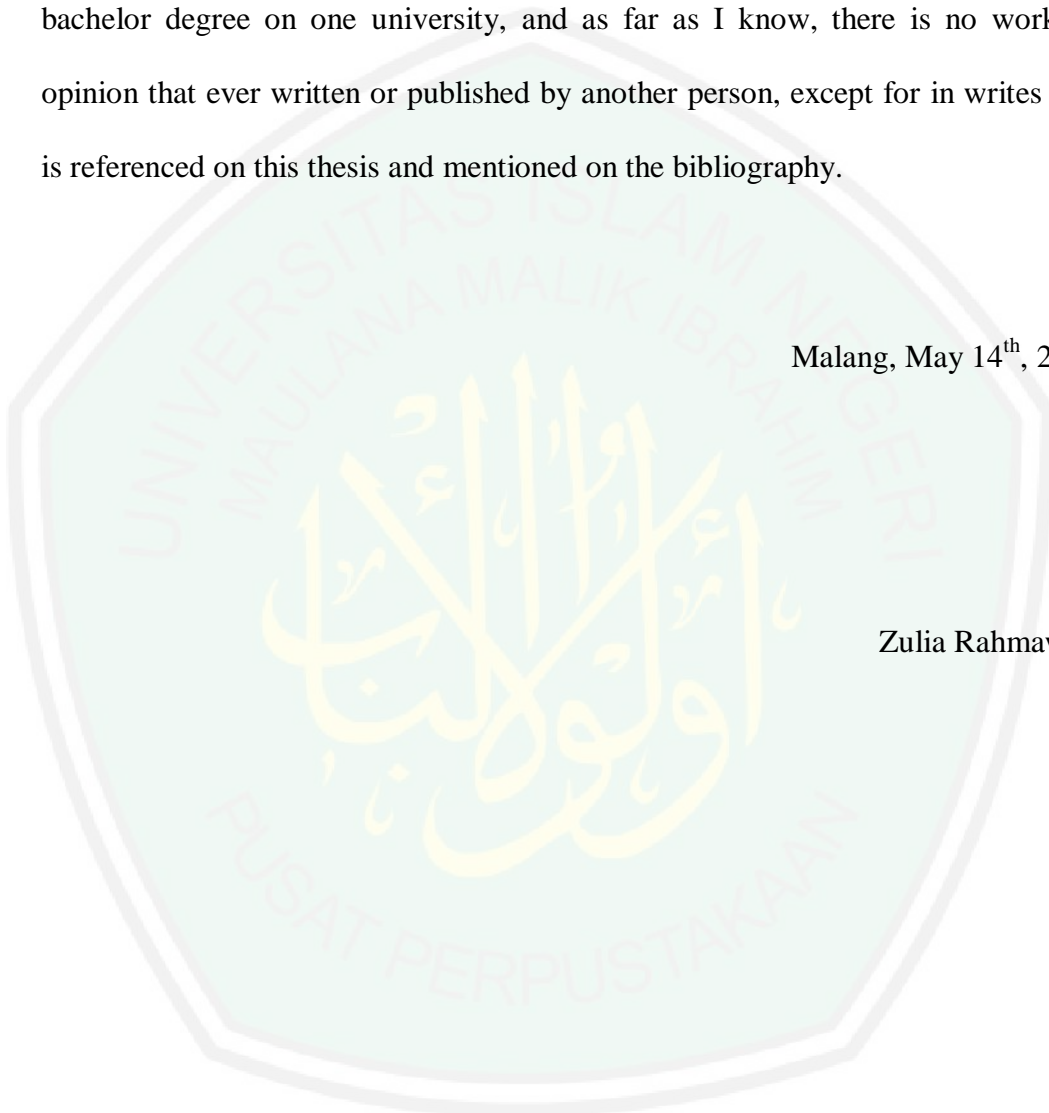
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STATEMENT LETTER

Hereby state that on this thesis is no work that ever submitted to obtain bachelor degree on one university, and as far as I know, there is no work or opinion that ever written or published by another person, except for in writes that is referenced on this thesis and mentioned on the bibliography.

Malang, May 14th, 2014

Zulia Rahmawati



PREFACE

Alhamdulillah, all praises to Allah, the most Gracious and most Merciful, who has given me guidance and blessing in finishing this thesis, entitled *“The Development Of Monopoly Game As A Learning Science Media To Increase The Result Of Learning Process At 5th Grade Of Mi Al Maarif 02 Singosari”*. Sholawat and salam are also delivered to the Prophet Muhammad SAW who has brought Islam as the *rahmatan lil al-almin*.

This thesis was focused on development of science monopoly game, so it was conducted to find out of effective, conspicuousness, and ease the use of Media Science Monopoly game for student 5th at MI Al Maarif 02 Singosari.

The author realize that this writing can not be separated from the guidance, direction and constructive criticism from various parties. Therefore, in this occasion the author wants to thankful as much as possible and the highest award to:

1. H. Zaenal Hanani and Dewi Rukhilah (my beloved father and mother), who have educated with affection and prayed with sincere, so the author can finish my study at the State Islamic University of Maulana Malik Ibrahim Malang.
2. Prof. Dr. H. Mudjia Rahardjo, M.Si as the rector of the State Islamic University of Maulana Malik Ibrahim Malang.
3. Dr. H. Nur Ali, M.Pd as the Dean of Tarbiyah and Teaching Sciences Faculty
4. Dr. Muhammad Walid, M.A as the Head of Islamic Elementary School Teacher Education

5. Dr. H. Sugeng Listyo Prabowo, M. Pd as the advisor who has spent his time, energy and mind, to provide guidance, motivation and advice for finishing this thesis.
6. All the Lectures and Staff of Tarbiyah and Teaching Sciences Faculty at the State Islamic University of Maulana Malik Ibrahim Malang.
7. Fathan Fahmi, S.Pd as the research assistants in MI Al Maarif 02 singosari, the entire board of teachers, employees and student 5th class at MI Al Maarif 02 Singosari who have a lot time, opportunity and direction to write this thesis.
8. All of the member ICP PGMI 2010 (Alfan nur azizi, khoiril anam, M. Najib anshori, M. alqoshwatu taufiq, Robby teo aziz, Rizza Mar'atus Sholiha, Ilfiatun Nafisah, Mustika Andayani, Riska Umami, Ika Zuni Mar'anis, Maulida Arum Fitriana, Lathifatus Sholiha, Farichatul fitriyah, Ifitah Kriya Pratama, Suci Nur Hidayah, Indah Nurainiyah, laily Alfa hasanah, Finayatul maula, Uswatun hasanah).

The author knows that there are still deficiencies in the writing of this thesis. Therefore, the author hopes to the suggestions and constructive criticism from readers for future improvement. Finally, the author hopes this thesis can be beneficial and useful for all and for educational institutions.

Malang, May, 14th2014

Writer

TRANSLITERATION GUIDLINES OF ARAB LATIN

The written of Arabic-latin in this thesis use directive transliteration base on the collective decision between the Minister of Religion Republic of Indonesia and the Minister of Education and Culture Republic of Indonesia number 158/1987 and number 0543 b/U/1987 that in broad outline can be described as bellow:

A. Hijaiyah Letters

ا	=	a	ز	=	z	ق	=	q
ب	=	b	س	=	s	ك	=	k
ث	=	t	ش	=	sy	ل	=	l
ت	=	ts	ص	=	sh	م	=	m
ج	=	j	ض	=	dl	ن	=	n
ح	=	<u>h</u>	ط	=	th	و	=	w
خ	=	kh	ظ	=	zh	ه	=	h
د	=	d	ع	=	'	ء	=	,
ذ	=	dz	غ	=	gh	ي	=	y
ر	=	r	ف	=	f			

B. Long Vocal

Vocal (a) panjang	=	â
Vocal (a) panjang	=	î
Vocal (a) panjang	=	û

C. Diphthong Vocal

أو	=	Aw
أي	=	Ay
أو	=	û
إي	=	î

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ABSTRACT

Rahmawati, Zulia. 2014. *Development of Science Monopoly Game to Increase Study Result at 5th Grade Students MI Al Maarif 02 Singosari*. Thesis, Teaching Education of Islamic Elementary School Department, Tarbiyah and Teaching Sciences Faculty, State Islamic University of Maulana Malik Ibrahim Malang. Advisor: Dr. H. Sugeng Listyo Prabowo, M.Pd

Key Words: *Development, Monopoly as Learning Media, Science, Study Result*

Playing is a very interesting for everyone, especially for children who are often to spend most of their time for it. A game can be a source of learning or a learning media if the game has purpose to reach education or learning process. Piaget considered a game as a media to increase the cognitive development of children. With a game children can practice their competences and skills that they needs enjoy and pleasurable.

The development of learning media with a game background is one of alternatives of innovative provided media. In this term, learning innovative model tend to the theory of constructivism learning.

Based on the background of the problem above, therefore the researcher used the science monopoly about living plant and photosynthesis to increase the result of students learning especially in learning science.

The purpose of this research is to produce a product to develop which is appropriate to be the source of learning, to know the validation result from the expert through the appropriateness of the media, and to know the implication of the learning result at 5th grade students of MI Al Maarif 02 Singosari after used the media.

The result of the research based on the evaluation of the validator they are an expert of learning, an expert of learning media, an expert of field evaluation through the media is very appropriate and can be used as the learning media in the class.

The result of the 5th grade student who are learning use the media (experiment class) with the class which learn without using the media (control class) have significant differences about 90.076 for experiment class while for control class is about 69.54. It showed that the result of students learning of experiment class is higher than control class. And the result proved that the media can increase the student result in learning science especially about photosynthesis.

This development research only limited in the topic of photosynthesis, so that needs more development for the other material especially for science lesson at 5th grade of Elementary School. That's why suggested to all of science teacher to try to develop the science monopoly which more creative to be the source learning for teacher and student to support the science learning process.

ABSTRAK

Rahmawati, Zulia. 2014. *Pengembangan Media Permainan Monopoli IPA Untuk Meningkatkan Hasil Belajar Siswa Kelas V MI Al Maarif 02 Singosari*. Skripsi, Jurusan Pendidikan Guru Madrasah Ibtidaiyyah, Fakultas Ilmu Tarbiyah dan Keguruan, Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang. Pembimbing: Dr. H. Sugeng Listyo Prabowo, M. Pd

Kata Kunci : *Pengembangan, Media Permainan Monopoli, IPA, Hasil Belajar.*

Bermain adalah hal yang sangat menyenangkan bagi siapapun, terutama bagi anak-anak yang menghabiskan hampir sebagian waktunya untuk bermain. Permainan dapat menjadi sumber belajar atau media belajar apabila permainan tersebut bertujuan untuk mencapai tujuan pendidikan atau pembelajaran. Piaget memandang permainan sebagai suatu media untuk meningkatkan perkembangan kognitif anak-anak. Dengan permainan anak-anak memungkinkan untuk mempraktikkan kompetensi-kompetensi dan ketrampilan yang diperlukan dengan cara yang santai dan menyenangkan.

Pengembangan media pembelajaran yang berlatar belakang permainan adalah salah satu alternatif penyedia media pembelajaran inovatif. Model pembelajaran inovatif dalam hal ini lebih cenderung pada teori pembelajaran konstruktivisme.

Berdasarkan latar belakang masalah diatas maka peneliti menggunakan media permainan monopoli IPA materi cara tumbuhan membuat makanan untuk meningkatkan hasil belajar siswa khususnya pada mata pelajaran IPA.

Tujuan dari penelitian ini diantaranya untuk menghasilkan produk pengembangan yang layak untuk dijadikan sumber media pembelajaran, untuk mengetahui hasil validitas dari para ahli terhadap kelayakan media, dan untuk mengetahui dampak hasil belajar siswa kelas V MI Al Maarif 02 Singosari setelah menggunakan media permainan monopoli IPA.

Hasil penelitian berdasarkan penilaian para validator yaitu ahli pembelajaran, ahli media pembelajaran, ahli materi dan uji coba lapangan terhadap media permainan Monopoli IPA adalah sangat layak atau sangat valid dan dapat digunakan sebagai media pembelajaran di kelas.

Perolehan hasil belajar siswa kelas V yang menggunakan media permainan monopoli IPA (kelas eksperimen) dengan yang tidak menggunakan media permainan monopoli IPA (kelas kontrol) terdapat perbedaan signifikan yaitu 90,076 untuk kelas eksperimen dan 69,54 untuk kelas kontrol. Hal ini menunjukkan bahwa hasil belajar siswa kelas eksperimen lebih besar dari hasil belajar siswa kelas kontrol yaitu $90,076 \geq 69,54$. Dari hasil tersebut terbukti bahwa media permainan monopoli IPA materi cara tumbuhan membuat makanan dapat meningkatkan hasil belajar siswa.

Penelitian pengembangan ini hanya terbatas pada materi cara tumbuhan membuat makanan, oleh sebab itu perlu adanya pengembangan pada materi lain khususnya IPA kelas V MI. Sehingga disarankan kepada guru matapelajaran IPA agar mencoba mengembangkan permainan monopoli IPA yang lebih kreatif

untuk dijadikan sumber media belajar bagi guru dan siswa dalam mendukung proses pembelajaran IPA di kelas.



CHAPTER I

INTRODUCTION

A. Background of Study

Playing is the most enjoyable thing for everyone, especially for children who always spend most of their time to play. Do not judge playing only from the bad side, playing with children in certain age should be a habit and maximized in their growth and development. The motoric nerve will moving continuously when they are childhood. So that they will use the muscles of the body maximally until they fell tired. While psychologically, they want to know and learn from their act.

Playing has many positive values for education, even it could be conversely in the development and students intelligent, moreover if the children has started the first stage of education that is elementary school. In this period, a child cannot emphasized and even let them play without some educative values, but the real emphasizing learning process should be embedded at first, considering every increasing level of lesson, also the level of the problems will be more difficult, for example science lesson, which forced the students to memorize, understand, and observe everything happen around them.

From the explanation above, teachers should be creative to look for new rapprochement to solve every problem that probably happened in a learning process. Teachers do not have to use a monotonous way, but they have to choose other proper variation. Model playing in a learning process is one of the alternative compensation.

Besides that, teachers have to dominate their knowledge and understanding in learning media, which consist of: ¹

- a. Media as the tool communication to make the learning process more effective.
- b. Reaching the purposes of education is the function of media.
- c. Particulars of learning process.
- d. The relation between teaching method and education media.
- e. Values or advantages of education media in learning process.
- f. Selection and usage of education media in learning process.
- g. Various equipment and technic of education media.
- h. Education media in each lesson.
- i. Innovation effort in education media.

The result of research and experiment which has done by the expert researcher show that model playing in learning process is one of models that can effectively use in learning process. In this case, playing method guided to problem solving which involved interaction between human, especially which involved in student live.

Playing should be given to all of students start from kindergarten to provide them with abilities of logical, critical and creative thinking and ability to collaborate each other. If the teachers still use the old paradigm learning in teaching students playing, means communication in science lesson directly in one purpose generally from the teachers to the students, teachers more dominate

¹ Oemar Hamalik, *Media Pendidikan* (Bandung: PT Citra Aditya bakti dalam Azhar Arshad, 1994), page. 2

learning without playing it will be disposed to monotonous and the students will get bored and suffered.

But, in educating students using playing method, teachers should choose various rapprochements, strategic, a proper method with the situation so that teachers can reach the purpose of planned learning process. This is important to know that bad or good of choosing model of learning is depend on the purpose of the learning, suitability with the learning material, the development level of the students, teachers ability to organize the learning and to optimize the source of available learn.

From the result of an interview with science teacher stated that understanding of students to the material is very poor especially with the material which has many peculiar terms. Even though they attention to all of teachers explanation but, in fact some of them are day dreaming and not focus on the learning, it is because of the limited media used.

Therefore, researcher tries to develop the learning media in play because Piaget stated that learning media consider play as a media to increase cognitive development of children. He also stated that cognitive development of children is limited the way they play. Playing might be help children to practice their competences and creativities which needed leisurely and enjoyable.² Besides that, playing is very important to train their muscles, physical ability, balanced, collaborates each other, and freedom. On the other word, playing will make them

² Elizabeth Hurlock, *Psikologi Perkembangan Suatu Pendekatan sepanjang Rentang Kehidupan* (Jakarta:Erlangga, 2004), page. 330

faster in training their physical abilities, social abilities, and get the emotional satisfaction and intellectual exercise.³

Through the usage of learning media hopefully we can increase the learning quality which will influence students learning quality toward tutored lesson. So that's why researcher wrote this paper on the title *“The Development Of Monopoly Game As A Learning Science Media To Increase The Result Of Learning Process At 5th Grade Of MI Al Maarif 02 Singosari Malang”*. By using a game for one of the learning media we hope that we can decrease students difficulties in understanding lessons especially science lesson.

B. Research Questions

Here are the research problems presented by researcher, those are:

1. How the specification of science monopoly game for 5th grade of MI Al Maarif 02 Singosari Malang which will be develop as learning media?
2. How the validity assessment of science monopoly game for 5th grade of MI Al Maarif 02 Singosari Malang?
3. What is the result after the 5th grade students use the science monopoly game as the learning media?

C. Research Objectives

1. To produce a certain science monopoly game for developing product of learning media at 5th grade of MI Al Maarif 02 Singosari Kabupaten Malang.
2. To make monopoly as an appropriate learning media product.

³ Oemar Hamalik, *Psikologi Belajar dan Mengajar* (Bandung: Sinar Baru, 1992), page. 104

3. To know how the validity of learning media product developed.
4. To know how is the result of students in 5th grade of elementary school at Islamic Elementary School of Al Maarif 02 Singosari Malang after use the science monopoly as the learning media.

D. Benefit of Research

Each research must have benefit. And hopefully this research can share the benefit with:

1. Science Development

Generally, by finding this research hopefully it can give support to the same type of research which had done before. Besides that the result from this research I hope that it can reach the research result and develop the knowledge related to general education world especially related to the problems in increasing students understanding toward science lesson.

2. Researcher and Candidate of Researcher

For researcher, this research is use as conveyance method to study about the problems scientifically in a learning process and understand the real condition about the learning process in the class and also about students understanding toward the explained lesson. Otherwise, hoped the researcher can increase the professionalism in research and teaching aspect. From this finding research I hope that it can be an inspiration for candidate researchers who are interest to do a research in education aspect and it can be a reference especially for the next researcher who will study about applicable problems in this research.

3. For Teachers

Through this finding, I hope that it can be an addition for teachers to take advantages of this facility maximally, study media or study methods which create an effective and conducive atmosphere for the learning activity in the class so that students easily understand to the lesson.

4. Education Institution (MI Al Maarif 02 Singosari Kabupaten Malang)

Through this finding also I hope that the institution get the ideas, reflections, and concrete information about the importance of learning media which use by the teachers to support the success of the learning process in the class so that students easily understand to the lesson. On the other hand, later it can also be one of the indicators which support the increase quality of alumnus in the certain institution, especially MI Al Maarif 02 Singosari Kabupaten Malang. School also hoped to provide supporting facilities in a learning process and create nice learning environment which full of supporting education atmosphere to increase student competence in a learning process.

E. Importance of Research

The importance development of learning media using monopoly, generally this can help students to understand the lesson deeply. The goal of his game is to fill the lack of media in learning science to be based on game at Islamic Elementary School of Al Maarif 02 Singosari Kabupaten Malang. By presenting science games which will help students to understand the lesson, learn and memorizing the lesson easily.

By this media I hope that it can increase the result study of student toward science lesson. Listening to the theory of science lesson itself is not enough, practice and memorizing which is boring especially Elementary students, this is the reason why there is a repeating material of a lesson. Besides that, I do hope it can increase the students understanding to the lesson and to decrease level of repeating material of the lesson at the higher class level, so that I hope the result of students that have studied using this media can be improve. School can also use this media to increase the quality of enjoyable learning.

F. Assumption and Research Limit

1. Assumption Development

Researcher assumptions to the development of monopoly learning media are:

- a. Teachers had never developed a media game for learning.
- b. A media game for learning science wasn't provided at Islamic Elementary School of Al Maarif 02 Singosari Kabupaten Malang.
- c. Through this game, students will be more controlled and on the latest learning students have to concentrate to the teacher but now the teacher will be concentrate to the students. On the other hand learning process will be interesting.
- d. Game method in a learning process is a competitive and aims the students to reach the achievements or good result on their study, because it gives new experience to the students.

2. Development limit

- a. Development of learning media is restricted on science lesson at the first semester of 5th grade of elementary school which discussed about the process of photosynthesis.
- b. Research has done at Islamic Elementary School of Al Maarif 02 Singosari Malang.
- c. The lesson material developed only restricted in a lesson material on the development of rules in monopoly game and the organizing of how the process of photosynthesis.

G. Operational Definition

In order to avoid an error in understanding or interpret some terminologies, writer should determining and explaining all of the terminologies related to the title of the thesis, as follows:

1. Development of monopoly as a learning media is a product of development process or to complete a product which available in the instrument or equipment which use for help the students during the learning process one of them is using monopoly as a learning media.
2. Cognitive, effective, and psychomotor aspects are three aspects to increasing result of study for students learning quality is some initiatives which have to do by the teachers or the institution.
3. Science lesson as knowledge which combining data from an experiment, observation, and deduction to produce an explanation about believable thing.

H. Specification Product

The products produced in the form of a set of instructional media monopoly Science is modified according to material, detailed specifications are as follows:

1. Scientific monopoly game was developed in accordance with the principles of the development of visual media has shaped the physical form of print media. With a variety of colors as well as images that correspond to the material so as to increase the interest of students to understand and remember easily what is presented in the media.
2. Consists of a monopoly game monopoly board shaped material printed aim to facilitate students' use of media and packaging of different media monopoly game with the development of the media before the game monopoly that is using the materials of flannel.
3. Guide Book, the content is how to play monopoly and the monopoly game rules. The design of this game instructions shaped like a desk calendar (calendar seated) making it easier for students to see and read commands if forgotten simply by flipping the sheet you want to search.
4. Dice, cube-shaped with a size that is not too small, so the size of the dice can be seen clearly by the student. Color dice is not monotonous black and white but is designed by using striking colors, made of cardboard and lined with flannel. The dice replaced with numbers making it easier for students to read the results of the acquisition of the throw.

5. Pion, from flannel material. The shape of the pole is a miniature replica of the tower paris. That are not easily collapse when the plot then made a stop at the base which is also made of flannel cloth and cardboard.
6. Toy money, monopoly money design made simple by stating the nominal money ranging from 500 dollars to 10,000 dollars. Images used on monopoly money is professor and scientist because of this monopoly is a monopoly IPA.
7. Cards "Get It!" And "Quiz Time", the second card is a replacement card and opportunity on a conventional monopoly game, the card contains brief questions (quiz), reward and punishment.
8. Monopoly board modified the image corresponding to the plant material.
9. Books material, this book is used as a handle students and to help students during the game.
10. Cards points, this card is filled with the name of the player and also the player's score, the score is a score where each player is not able to answer the question that should go to jail.
11. Cards information, serves as a conduit of information to the owner of the plot and the material can be used as a question.
12. Question Cards, this card contains several questions in accordance with the material in each plot. This card comes with an answer key known only to the owners of plots.
13. Components using flannel base material designed by researchers and all are handmade.

I. Systematic Discussion

The systematic discussions in this research as follows:

- Chapter I : In this chapter will discussed about the background problems, study case, purpose of research, function of research, the importance of development, assumption of development and limitation of development, definition of operational and systematic discussion.
- Chapter II : This chapter will discuss about the theory of research.
- Chapter III : This chapter consists of development method, development mode, procedure development, product validity, and product experiment.
- Chapter IV : This chapter will explain about result of data and research from the research that have done.
- Chapter V : In this chapter there are analysis media development of monopoly game, result validity analysis from the expert person and analysis response from the students also product experiment.
- Chapter VI : This chapter is about conclusion and suggestions.

CHAPTER II

REVIEW OF RELATED LITERATURE

Literature development of monopoly as a media learning especially for science lesson to increase students result of 5th grade at MI Al Maarif 02 Singosari, are consist of: 1) Definition of development, 2) Media monopoly for science, 3) Result of study and 4) Science learning process, 5) The photosynthesis process.

A. Earliest Research

Related to this development research I did several researches from the earliest research, such as:

Table 2.1
Earliest Research

No	Title of Research	Result of Research
1	Development of Educative Media Monopoli for Mathematic Lesson in terms of Integer at 4 th class State Elementary School of Kranggan 3 ¹ (Novitaria, 2012)	Did an experiment in a small group of 4 th class at State Elementary School of Kranggan 3 Ngajum showed that the students were so excited study using media educative monopoli. While the result of an open experiment which have done to 14 students in a class showed that $t_{hit}=9.06$ If we compare with the chart score $=2.16$ on significance level 5 %, we will find $t_{hit}>t_{tab}$, which means that the average result of student who used the educative monopoli is better than

¹Novitaria, "Pengembangan Media Monopoli Edukatif untuk Pembelajaran Matematika Materi Bilangan Bulat di Kelas IV Sekolah Dasar Negeri Kranggan 3", Skripsi, Fakultas Ilmu Pendidikan UM, 2012

2	<p>Development of Monopoli Media for Studying English Language at 4th Class of State Elementary School of Jajar I Wates kabupaten Kediri²</p> <p>(Hendra Sasworo, 2013)</p>	<p>before they use it.</p> <p>The result from the experiment in developing monopoli media toward a media expert is 82.14% with valid criteria. Toward a media expert is 82.5% with valid criteria. Experiment in audiences group is 85.3% validity criteria. An open experiments audiences is 91.13% with valid criteria. The average of the result increase for about 18%.</p>
3	<p>Development of Monopoli Media for Studying Social Lesson IV in Term of Social Problems in a Certain Place³</p> <p>(Ainul Maghfiroh, 2010)</p>	<p>The result of the experiment showed that this media also fit to use for social lesson in term of social problems in a certain place. The evidence information is the result validation from; the validator they are 2 people who are expert in media scored 91.8%, 1 an expert subject scored 80.3%, students 91.8%. while the study result of students for the open experiment showed the average students score before use the media was 53 and after use the media is 71.1. For the effectiveness of media used was done an experiment using statistic t-test, and the result =16.9 then compare with db 29 chart, level 5 % with result t=2.04. Based on the result we conclude that the result of students after study used the media is higher than before.</p>

²Hendra Sasworo, "Pengembangan Media Permainan Monopoli untuk Pembelajaran Bahasa Inggris Siswa Kelas IV SDN Jajar 1 Wates Kabupaten Kediri", *Skripsi*, Fakultas Ilmu Pendidikan UM, 2013

³Ainul Maghfiroh, "Pengembangan Media Permainan Monopoli untuk Pembelajaran IPS Kelas IV Pokok Materi Permasalahan Sosial di Daerah Setempat", *Skripsi*, Fakultas Ilmu Pendidikan UM, 2010

4	<p>The usage of Monopoli media to Increase the Result of Study Social Lesson at 3rd Class Elementary School of Sabilunnajah Pasrepan⁴</p> <p>(Nur Fauzia, 2010)</p>	<p>The result of the experiment at the first cycle got increasing average of percentage become 64.28 with the complete level up to 50% and non-complete level up to 50%. On the second cycle the average of percentage increased up to 77.85 with the complete level up to 78.57% and non-complete level up to 21.43% from 14 students. So that we can conclude that we have succeed by using this media in social lesson.</p>
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B. Definition of Development

Development is a process of interpreting specification design into a certain essence. Processes of the interpreting specification design consist of identification problems of study purposes, strategies development or method of learning and effectiveness evaluation, efficient, and how the learning attracts the students.⁵

Development in a very general meaning means growth, slow evolution, and a gradual evolution. This understanding will be applied in the various learning aspect. While in the aspect of instructional technology, development has a specific meaning. According to Seels dan Richey, development means as a process of specific interpreting and clarifying a concept into a physical formation. On the other words, development means a process that produce learning equipment.⁶

⁴ Nur Fauzia, "Pemanfaatan Media Permainan Monopoli untuk Meningkatkan Hasil Belajar IPS Siswa Kelas III MI Sabilunnajah Pasrepan", *Skripsi*, Fakultas Ilmu Pendidikan, 2010

⁵ Uyun, Fitrotul, "Pengembangan Bahan Ajar Pembelajaran Al – Qur'an Hadis dengan Pendekatan Hermeneutik Bagi Kelas 5 Madrasah Ibtida'iyah Negeri (MIN) 1 Malang", *Tesis Program Studi Pendidikan Guru Madrasah Ibtidaiyah (PGMI) Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang*, 2010

⁶ Punadji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan* (Jakarta: Kencana, 2010), page. 197

A development of a product learning especially monopoly as science media learning required to help students study easily, quickly, attractively, and never make students boring with the lesson so that also can easily reach the best result of the learning. This is very suitable with the achievement of learning process which have to be followed in each education as existed in the government rules No. 19 years 2005 about National Education Standard, chapter 19 paragraph 1 as follow;

“A learning process in each education should be arranged interactively, inspirationally, pleasurable, challenging, motivating the students to participate actively and give an enough room for the initiative, creative and autonomous with the proper ability, interest and physical and psychological development of the students”⁷

C. Science Monopolyas a Game Media

1. Game Media

Game is every contest between players that have interaction each other by following a certain rule to reach the certain purpose.⁸This kindof characters learning methods are competitive and guide the students to reach their achievement or their certain result of study. A game should be interesting and give students new experience of study.⁹

According to Hans Daeng a game is an absolute part of children life and also an integral process of forming children personality. On the other hand, Andang Ismail stated that game has two definitions. First, game is an original playing activity to make someone become enjoy and satisfy, but

⁷ Permen No. 19 Tahun 2005 tentang Standart Nasional Pendidikan, Pasal 19 ayat 1

⁸ Arief S. Sadiman, dkk. *Media Pendidikan: Pengertian, Pengembangan, dan Pemanfaatan* (Jakarta: PT Rajagrafindo Persada, 2003), page. 75

⁹ Benny A. Pribadi, *Model Desain Sistem Pembelajaran* (Jakarta: Dian rakyat, 2010), page. 43

indicated with finding the winner or the loser from the players. Second, a game meant as a game activity in a plan of looking for an enjoyment and satisfaction, but indicated with finding the winner or the loser from the players.¹⁰

Based on the opinions from skilled people below we can conclude that a game is an activity which did by some children to look for amusement which can construct children personality and help them reach their physical development, intellectual, social, moral, and emotional.

Game method is a learning method where the lesson material delivered through an interesting activity (amusing activity) which can support created instructional purpose in learning science cognitively, effectively and psychomotor.

This kind of method is same as other methods which need very clear formulating instructional purpose, evaluation of topic or subtopic, specification of learning process activity, etc.¹¹

Piaget considering a game as a media to increase development cognitive of children. He said that development cognitive of children limit the way they play. A game allows children practice the competences and creativities which need informally and interestingly.¹²

¹⁰ Andang Ismail, *Education Games Panduan Praktis Permainan yang Menjadikan Anak Anda Cerdas, Kreatif dan Shaleh*, 2009

¹¹ Estiprastikaningsih, *Metode Permainan dalam Pembelajaran Matematika* / (<http://www.google.com>, accessed on March 10, 2014 time 10.05 WIB)

¹² Elizabeth Hurlock, *Psikologi Perkembangan Suatu Pendekatan Sepanjang rentang Kehidupan* (Jakarta: Erlangga, 2004), page. 330

Piaget sure that cognitive structures needs to be trained, and a game give a perfect setting for this exercises. Play and game become a very important things to do by children because, by playing, children will add their knowledge and their experience. Besides helping to increase their thinking power and their personality, playing very help their physical development by hard and soft movement. On the other hand, playing also has social, emotional, and moral function, they will feel various emotional experiences, like happy, sad, proud, disappoint, angry, enthusiastic, etc. Hurlock stated that playing can influence children development, as follows:¹³

- 1) Physical development
- 2) Motivation of communication
- 3) Distribution of hidden emotional power
- 4) Distributefor needs and desire
- 5) Learning sources
- 6) Development of individual perception
- 7) Study about being sociable
- 8) Moral standard
- 9) Learn and play according to the gender
- 10) Wanted development of personality

As a learning media, a game has many advantages as follows:¹⁴

- 1) A game is something interest to do

¹³*Ibid.*, page. 349

¹⁴ Arif Sadiman, *op.cit.*,page.78

- 2) A game that allow an active participation from student to study
- 3) A game can give a direct feedback
- 4) A game that allow some concepts implementation or roles in a situation and actual roles in society
- 5) A flexible game
- 6) A game can easily duplicate
- 7) Help some students who are feel difficult in learning using traditional method
- 8) A game can increase student activeness in giving an opinion or communicate each other, this is may be help some quite or shy students which indirectly will help them become more confident
- 9) A game can help students increase their communicative ability

The advantages of the other games are training the students to dramatize something and also train them to be a brave person, attract another students so that the class atmosphere become alive, students can perceive an event so that they can easily conclude based on their own understanding and the should be trained to arrange their mind orderly.¹⁵

We can say that students play if they can complete the self chosen and self directed. Students who are competence and have experience in playing will be a creative student, confidence and selfmotivation. The important thing is that, for students playing is a work. That's why teachers should keep it.

¹⁵Estiprastikaningsih, Metode Permainan dalam Pembelajaran Matematika/
(<http://www.google.com>, accessed on march 10, 2014 time 10.00 WIB)

By playing students will not only pervade the information but also work with the information, how is the application and always try repeatedly till the information can be understood by the students.

When playing, student physical also play to understand how the body is working, make it strong and develop the muscles coordination through the moving, training the soft motoric (taking some small things, seeds, small pieces of papers, etc). And also training the hard motoric and their balance, such as jumping, running, laughing, etc.

In an activity students also develop their emotional skill, the confident to other people, being an autonomous person and brave to having initiative. When playing students get intellectual innovation, guessing a picture, answer some questions, guessing a puzzle and etc. another advantages they get also the development of multiple intelligence.

Next, several things to notice by teachers when they use the game in a learning process are:

- 1) Students need extra energy, unhealthy student has very small probability to play.
- 2) Students should have enough time to play.
- 3) Students need some toys that proper with their ages and their level of development.
- 4) Needs a room for play, do not need too wide and special room. Students can play anywhere for example in the class, yard, even in a small room.

- 5) Need some knowledge to play. Students learn to play and try to do it by themselves, imitate their friends or know how to play from other people.
- 6) Needs a partner. If a student playing alone, he will lose his chance learning from his other friends. Conversely, if there are too many partners, this is going to lose his enough chance to amuse himself and find his own needs.

Besides a game has many positive side for educations, instead game become something important for children in term of growth and development, especially if the children have been standing in the first stage of study that is in an elementary school, in this period, a children cannot be force even let them to play without any educative value, but forcing them to learn is actual thing to plan into their mind, considering the various increasing level of lesson, so that the level of the problems will be more difficult.

Discussing the problems in learning especially which makes most of students bored of that, including elementary school students and its very amusing playing, but also containing negative side should be placed in its own places. If not, it makes some point of view who are involved in the world of education including the teachers are starting to rotate their brain to find an alternative in creating a new learning method.

So that, in this research the development of monopoly game used as learning visual media which has function to help teacher deliver their lesson easily, strengthening of understanding the learned lesson, and

increasing motivation and growing student interest in learning will increase the result study of students on science lesson in the end. This research also will modify a monopoly game in the form of education game so that it can be relevant with the learned material and add motivation for students to learn even tough by playing.

2. Science Monopoly Game

a. Brief History of Monopoly Game

Before it became a game which usually we play like now days, monopoly game has a long unique history. In fact, this game has a controversial story about who is the actual owner of the right paten. Far before monopoly game become paten, there was a game which similar with monopoly game which called The Landlord's Game.

This game conceived by Elizabeth Magie at first in 1904 to make people understand easily about a tax. Jake the Jailbird dan Officer Edgar Mallory are two famous character in monopoly game. The original name for monopoly was Rich Uncle Pennybags.

Magie was tried to obtain a patent for this game at the first time in 1904, but exactly in 1913 monopoly game just began to published by The Newbie Game Company, London in 1913 by changing the name became Brer Fox an' Brer Rabbit. By the time being and technology development,

right now monopoly has many versions in each countries, one of them is Indonesia.¹⁶

b. Mechanism of Monopoly Game

We can say that the mechanism of this game is quite easy. It can be played by two people in minimum and eight people in max. Then, a player will throw the dice being in shifts, after that he will drive the tool through the start. For the beginning of the game, a player will drive the tool around the monopoly for once till he backs to the start. After drove the tools around, the players allow to buy some properties in the slot where he stand. Each property has different prizes also the number of the tax which has to pay. If your tool stand on the slot of “chance” and “general fund” means that the players should take a card that provided by monopoly, and follow the instruction that wrote in each card and so on.

c. Application Method of Monopoly Game in a Learning Concept

Learning concept using science monopoly game as the learning media is a new method considered by the writer because there are many students stated that science is a lesson that sloped to memorize, observe, and understanding some event around us, so that this lesson probably interested by students who already understand the basic of science. Here, writer got idea to minimize the difficulty of science lesson. Start from playing monopoly as the writer’s hobby which is challenging, as if inviting the players to go around the world, playing monopoly also makes the players

¹⁶<http://uniknya.com/> Tahukah kamu Sejarah Awal Monopoly, (<http://www.google.com>, accessed on 08/05/2014 time 19.34 wib)

unrealized that they bring their emotional in it, moreover when one of the player have to pay the tax or a charge, got a fee paid to an agent, managing their money so that they can be rich by their investment.

From the result of the research and an easy experiment which have done before, got a conclusion about the mechanism of applying method of this game toward learning science with another way, as follows:

- 1) Slots in monopoly picture are containing information about countries names and the capital city of the countries, that sectioning had been clarified based on the location of the countries that include in a certain continent. On monopoly the results of the slots development change with the science in terms of photosynthesis. By using this science monopoly the learning process will be very exciting, when they are mention something related with the science monopoly repeatedly, it makes the students indirectly save the words in their memory and they will feelenjoy and fun(not monotonous like listen, attention, and memorize).
- 2) “chance” and “general fund” slots change with “Get It!” and “Quiz time”. If in“chance” and “general fund” has a purpose of something fun, it will be different with “Get It” and “Quiz Time” the players will get the knowledge because there will be questions related with the discussed lesson or lesson which will discuss in each cards, so that students will understand easily and will never feel depressed or burdened with the lesson and understand the explained lesson simultaneously, and remember again the lesson that has been explained. So that a direct

communication between teacher and students whether this is emotionally or non-emotionally, and this is will be running well because of the conducive and comfortable condition.

d. Systematic Model Learning Using Science Monopoly Game as The Media

By using this game learning can be change become an interesting learning process and the atmosphere in the class will be comfortable. Students can easily catch the material of the lesson. The purpose of using monopoly game as a learning concept is to train the student creativities and train them to work each other with their friend in the same age. If this game becomes a model of learning, students will be invited to play while keep focusing on the material of the lesson without bored impression, because this material gave simply by using question card and explanation card also using monopoly board or carton paper as the media, so, the students seems like go around the monopoly board that contain of science knowledge. In the evaluation process, teacher will give this model learning in the end of the class.

e. Advantages which Gotten from a Science Monopoly Game as the Learning Media

After explaining about the systematic method with the learning concept, we are going to continue on the explanation of the function from the science monopoly as a learning method, as follows:

1) Practice method, unique, and enjoyable

How could it be? This is happen except for the first difficulties, petition period which more modern forced individuality indirectly, especially writer who involved in the world of education was trying to find available trouble solver, to minimize and make it easy the learning method which become easier the level of the problem solver.

2) A strong memory as the continuousness impact between brain and picture

In a research which have done, about comparing strong and weak individual memories, in fact, a person who are have strong memories, is a person who are not only memorize the written lesson and listened to the teacher monoton, but also from looking at a picture which explained about the lesson that he have learned. Correlation between the brain and the six sense are very strong, even it will be stronger if the seeing sense participate to help understanding the picture. This is happen because a person not only increasing their reading and writing skill, but they have to force their self to investigate their pre cognizant process.

3) Comfortable in their individual psychology

Comfortable is a very important factor in a learning process, why? Because comfortable formed by stimulated muscles in human brain and body, as an effect of relaxed condition, without any compulsion and of course this is the effect of the first spirit.

- 4) Do not need more money in the applications, so that it can reach out for everyone who wants to try to make or use this media.
- 5) It can be practice everywhere you want, for the composure and maximum result in a learning process.
- 6) The unique and comfortable learning process make the students never feel bored in a learning process because there are a game as an element of study in it.
- 7) A game can train the students work each other.
- 8) By applying monopoly as a learning media, it can motivate students to keep studying and change their pattern idea that they are not study based on the book only.
- 9) Implicating a game in a learning process, the class condition will be far from feeling bored.
- 10) Monopoly can also repeat the lesson material that had ever been explained before.
- 11) Students will answer each question truly if they stop on the question slot in the part of monopoly.
- 12) Study will be more effective by using this media, because the students will be fun and more enthusiastic in following learning process in the class.
- 13) Applying student imaginations about the game.

Besides the advantages or functions from the science game monopoly as the learning media, it also has some disadvantages which are not very strengthen, those are:

- 1) Mechanism of making questions and material in the cards of monopoly should be prepared as interesting as possible so that the students will never get bored.
- 2) This media needs well preparation and suitable concept with the lesson.
- 3) Lack of students understanding about the rules of the game make possible of student disturbances when they are playing.
- 4) Students will be confused to answer the questions if they don't understand about the explained materials.
- 5) Needs more time in operating the monopoly game.

D. Study Result

1. Definition of Study Result

In an Indonesian dictionary, etymologically study means “an effort to get knowledge and cleverness”. This definition means that study is an activity to reach your understanding through the knowledge and fulfill necessities to get the knowledge which never had before. So that by studying we will be understand and we can do everything about what we have learned.¹⁷

And psychologically, study is a process alteration of a behavior as the result of an interaction with the environment in completing the live

¹⁷Baharuddin dan Esa Nur Wahyuni, *Teori Belajar dan Pembelajaran* (Yogyakarta: Ar-RuzzMedia, 2006), page. 13

necessity. The alterations will be real in all aspects of behavior.¹⁸ While the study results is the process of find the score of students through the activities and measurement of the students result.¹⁹

Base knowledge about the result of study sometimes mention by “reflection of learning”, which is point to a quick and right reception to the students so that they know how they are working with it. The more they get quick information the more they understand better, so that the wrong information will be repair soon in the next study activity.²⁰ Reflection or the study result in a learning process can be interpret as all of information which has gotten along learning process that can be used as consideration to repair the ideas and transformations in a learning process. An accurate reflection as the accurate evaluation result also, it will make the revision of education easier.²¹

2. Purposes and Study Result

The first purpose of the study result is to know the success level of a student after following the learning activity where the success level of the study will be sign with a letter, words, or a symbol as the score. The first purpose can be used for various requirements.

¹⁸ Daryanto, *Belajar dan Mengajar*(Bandung: CV. Yrama Widya, 2010), page. 2

¹⁹ Dimiyati, *Belajar dan Pembelajarannya*(Jakarta: PT Rinneka Cipta, 2006), page. 178

²⁰ Oemar Hamalik, *Kurikulum dan Pembelajarannya*(Jakarta: Bumi Aksara, Cetakan keenam 2007), page. 88

²¹ Dimiyati, *Op.cit.*,page. 193

Result from the evaluation of study activities will be used in the end of the activity for the following requirements:²²

- 1) For diagnostic and development, means using the result from the evaluation study activity as the base diagnostic of strong and weak of students with some reasons.
- 2) For selected, means using the result from the evaluation study activity use as the base thing to decide which students who are very suitable for the certain job or education.
- 3) For moving to the higher level of class.
- 4) For placing, means the students can be develop in the proper level of the ability and potency they have, so we have to think that we have to place a student in a proper place base on their ability and their group abilities.

3. Study Result as the Research Object

In attempt to understanding and measuring alteration of behavior easily then mental human behavior divided into three domains: cognitive, effective, and psychomotor. If study cause having a good behavior, it means that the good behavior is the study result. Domain of the study result is the spiritual behaviors which will be change in an education process. A potential behavior had to be changed, and the changing of the behavior and the result of it will be described in the following chart:²³

²² Syaiful Bahri Djamarah, *Prestasi Belajar dan Kompetensi Guru* (Surabaya: Usaha Nasional, 1994), page. 21

²³ Purwanto, *Evaluasi Hasil Belajar* (Yogyakarta: Pustaka Pelajar, 2009), page. 48-49

Table 2.2
Chart of Changing Behavior and the Result of Changed Behavior

Input	Process	Result
Students: 1. Cognitive 2. Affective 3. Psychomotor	Learning process	Students: 1. Cognitive 2. Affective 3. Psychomotor
Potential behavior which can be change	An effort to change the behavior	The behavior which already change: 1. Teaching effect 2. Companion effect

The purpose of classification of educations, should refer to the three domains that stick to the students, those are cognitive domain, affective domain, psychomotor domain.²⁴

4. Indicator of Study Result

There are many teachers feel difficult to answer some questions that asked by the students about the succeed of the learning process and some of them also asked about what can the teacher prove from the succeed of the learning process?, to answer those questions we have to decide about what is the criteria from the succeed of the new learning first and after that decide the equipment (media) to increase the success.

There are two indicators of the study result below:²⁵

- 1) Criteria regarded from the aspect of the process
- 2) Criteria regarded from the result

²⁴ Anas Sudjiono, *Pengantar Evaluasi Pendidikan* (Jakarta: PT. Raja Grafindo Persada, 1995), page. 49

²⁵ Asep Jihad dan Abdul Haris, *Evaluasi Pembelajaran* (Yogyakarta: Multi Pressindo, 2008), page. 20-21

5. Some Factors that Affected the Result of Learning Process

Generally, the factors that affected the result of the learning process divided into two categories, those are internal and external factors, both of them are affecting each other in an individual process so that it can decide the quality of the study result.²⁶

a. Internal Factor

Factors that come from the students itself covered two aspects, first of all is psychological factor (physical character) and psychological factor (spiritual character).²⁷

- 1) Psychological aspect
- 2) Psychological aspect consists of students spiritual intelligent, motivation, interest, attitude and talent.

b. External Factor

Social environment consist of: social environment of school, social environment of society, social environment of a family, and non-social environment which consist of: natural environment, factor instrument, and factor of a material of a lesson.

E. Studying Science at Elementary School

1. Definitions of Science

Science is a human struggle in understanding universe trough the correct target to observe it, and using the true procedure, and explain with valid and logical thinking so that can produce the truth conclusion.²⁸

²⁶ Baharuddin dan Esa Nur Wahyuni, *Opcit.*, page. 19

²⁷ Muhibbin syah, *Psikologi Belajar*(Jakarta: PT Raja Grafindo Persada, 2006), page.145

The origin word of science comes from Latin language “*scientia*” means knowledge about, know something about; (2) knowledge, meaning, deep and right understanding pengetahuan. Knowledge reconciling to: (1) systematical study, (2) the organized body of knowledge, and (3) theoretical knowledge. Usually science knowledge has a meaning that reconcile to the knowledge in the thinking concept and theoretical concept in that systems, which considered all of kinds of knowledge.²⁹

This kind of knowledge systems built with circular cognition which controls all of observing and analyzing activities plus a series of experiments in a laboratory to approve the system frame and understanding which more comprehensive. In the development, science use for reconciling knowledge about nature and has a nature object and nature indication which often classified as the natural science. Science knowledge is more inevitable because the observed natural indication is relative clear and measured well.³⁰

Generally science knowledge has a specific characteristic which makes different with the other knowledge. The knowledge related with nature obtained empirically, namely the direct observation to the natural phenomenon. Using method for taking a conclusion based on the fact and logical thinking so that we can find inevitable answer.

²⁸ Leo Sutrinno, dkk. *Pengembangan Pembelajaran IPA SD* (Departemen Pendidikan Nasional: Direktorat Jenderal Pendidikan Tinggi, 2007), page. 19

²⁹ Surjani Wonorahardjo, *Dasar-Dasar Sains* (Jakarta: PT Indeks, 2011), page. 11

³⁰ *Ibid.*, page. 13

From the explanation above we can conclude that science is a group of knowledge which gotten through the certain methods. Science tries to explain about everything which include in the realm of the study and it needs objectivity and clear method for that. Science also tries to authorize and use the nature for the human safety, increasing the grade of life, work efficiency and effectiveness. The history of science from period to period help human find an accurate structure and method which proper with the realm of study.

2. Characteristics of Science

As one of the rising knowledge, science formed from interrelation between posture and science process, investigating natural phenomenon, and scientific product.

Scientific posture, like critic or sensitive to the environment, feeling curious, objectivity, and skeptical, forced a person to find an issue from an object or natural indication that he faced. This issue become the basic to do a scientific process, which consist of empirical observation process and logical reasoning.

Analysis above gave a sign that the three organizer elements of the science knowledge are connected and will never separate each other. The element process consists of empirical observation activity and logical reasoning are the important part to bridge a posture and an observed natural phenomenon to manufacture science products. Means, the authorizing of this process of scienceskill become essential for a person who studying

science and wants to study science. Science process has to be authorized by the students or someone who are learning science described in the following chart.

Table2.3
Science Processesand the Definition

No.	Science Process	Definition
1.	Observation	Make the detail of natural indication, whether they are material indication or incidence indication, using various senses to identify the characteristics or aspects of the indications.
2.	Classification	Arranging or dividing the object, indication, information, in a group base on the method or certain system.
3.	Measuring	Do a quantitative experiment through the process of comparing object/indication with the standard measurement/system.
4.	recording/write the data	Collecting all information about the objects or the indication which illustrate uncommon situation.
5.	Identifying variabel	Recognizing the characteristics of the object or the factors in a good unchanging indications or changing indications because of the different conditions.
6.	Interpreting data	Analyzing and organizing data by deciding the pattern or connection between data.
7.	Predicting	Making an hypothesis about the indication which will happen or expected condition.
8.	Inference	Making inference base on the logical reasoning to explain the experiment.
9.	Generalization	Describing the general inference from the available parts.
10.	Make a decision	Identifying and choosing an alternative action from some choices based on the argument or the discovery.

3. Learning Science in Elementary School

Learning can be defined as a system or a process of learning to the designed, implemented, evaluated systematically in order to make the students can reach their purposes of learning effectively and efficiently.³¹

Learning can be regarded from two sides, first learning regarded as a system, learning consist of a number of organized components such as the purposes of a learning, learning materials, strategies, and learning method, learning media, class organizing, learning evaluation, remedial and enrichment of a learning.

Exceptionally, science learning process as the purpose of general education which documented in a bloom of taksonomi that: hoped it can give cognitive knowledge, which is become the first purpose in a learning process. Means of this kind of knowledge is the base knowledge from the principal and useful concept in the daily life. Generally knowledge is about fact to understand and specialize continuously, and looking at the explanation and the regularity.

Besides that, the science learning, also hoped to give psychomotor skill, scientific posture skill (affective), understanding, habitual, and appreciation in looking for an answer of a question. Because those characteristics will be compare with the other learning.

³¹ Kokom Kumalasari, *Pembelajaran Kontekstual Konsep dan Aplikasi* (Bandung: PT Refika Aditama, 2011), page. 3

In science learning process should give an experience to the students by invite them to know the process and product in science and technology. It should fulfil the individual, social, and student environment needs.

4. Content of Learning Science in Elementary School

Based on unit level off the education curriculum 2006, content elements of science learning consist of some science learning aspects which is taught at the Elementary School those are: 1) Living things and the living process those are human, animals, plants, and the interaction with the environment and the health, 2) things and materials, the characteristics and the functions, including solid material, liquid, and gasoline, 3) Energy and the change consist of magnetic, electricity, light, and moderate instrument, 4) earth and universe consist of soil, solar system, and the other things in the universe.

Appropriate with the learning of the content, the experiment and the development of the learning materials are specialized on the basic material about plants, especially “photosynthesis” and additional theory about “plant respiration”.

The main points of the discussion in photosynthesis are:

a. Photosynthesis process

Photosynthesis is a process of forming organics material such as sugar or carbohydrate from the organic material, like CO_2 and water using sunlight. So in a process of photosynthesis the basic elements are CO_2 and

water, and the result of photosynthesis are glucose (carbohydrate) and oxygen.

b. A place where the plants save their foods stockpile

Foods stockpile saved in the root, stem, and the fruit of the plant. Like sugarcane plant and sago palm saved their foods stockpile in their stem. Cassavas, carrots, turnips, and juicy tuber saved their foods stockpile in their roots so that people call them as edible root.

c. Human and animals are depend on the plants

Green plants used by human as the food source, for human pet foods, for clothes, and etc. green plant also produce oxygen which is very important for all of the living creatures.

F. Concept, Fact, and an Error Concept of Photosynthesis

1. Photosynthesis Concept

Photosynthesis is a process of producing foods in a green plant. Some factors needs for the photosynthesis products are: ³²

a. Water

Plants absorb water from the soil, then the roots absorb the water to distribute through the xylem from the root to the leaf. The content of water in the air and the soil are important influence for photosynthesis rate.

³²Agus Sugianto, dkk. *Pembelajaran IPA MI* (Surabaya: LAPIS PGMI, 2009), page.5-11

b. Carbon Dioxide (CO₂)

Carbon dioxide (CO₂) obtained from the air that comes into stomata. Just like the concentration of carbon dioxide in the air is also an important influence for photosynthesis rate.

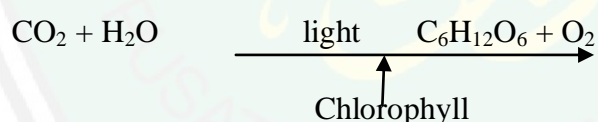
c. Chlorophyll

Chlorophyll means the green substance of a leaf that usually absorbs the sun light. Chlorophylls are available in the chloroplast. We can find chloroplast in leaf especially in the upper epidermis of the leaf.

d. Light

Light has various length of wave. The factor of sun light is very important in establishing photosynthesis rate. A bright condition and a cloudy condition give the different result on the photosynthesis activity.

Equation of photosynthesis reaction, as follows:



2. Fact About Process of Producing Foods in a Green Plants

Photosynthesis is a process of food production which happened in a plant especially some plants that have green pigment (chlorophyll). Caught with the process of photosynthesis there are another fact, those are:³³

- 1) Most of plants are green (have green pigment)

³³ Sri lestari, *Fotosintesis* (<http://blog.unnes.ac.id/dianpawitra/ilmu-pengetahuan-alam-untuk-kelas-v-tumbuhan-hijau/> accessed on May, 12th, 2014 time 09.30 WIB)

- 2) Plants which are live in a dark place, the leaf is pale and will be die quickly
- 3) If the plants doesn't have enough water, it will be die
- 4) A healthy plant will produce a good fruit

A food stockpile is the way of a plant save the photosynthesis products. There are many facts about a food stockpile for example; cassava has tuber, corn save the food stockpile in the form of seed, guava trees produce guava fruit.

From the concept which found in the material of food productions in the green plants, next, if we learn then we find connection between concepts that called principal. Some concepts in the form of principal: photosynthesis result especially carbohydrate as the source energy of living thing also the oxygen as the result of secondary thing for breathing.

3. An Error in a Concept of Food Production in the Green Plants

Photosynthesis reaction is a sequence of complex reaction. Here are some examples of the error concept in photosynthesis:³⁴

- a. Plants got the foods from the soil

Verification: autotrophic plant can produce foods from the organic substance and sun light. The non-organic substance is water from the soil.

³⁴*Ibid.*

- b. Photosynthesis is a changing of carbon dioxide and water become carbohydrate and oxygen.

Verification: photosynthesis is a sequence of complex reactions using energy to change organic substance become released carbohydrate and oxygen.

- c. Photosynthesis happening in the afternoon and at night the plants will have respiration.

Verification: both of photosynthesis reactions and respiration in the plants happen at once. Photosynthesis has reaction those are bright phase and dark phase. Bright phase needs light while dark phase doesn't need any light. Respiration in a plant are always, because it needs for its life.

- d. A plant becomes green because that plant absorbing the green light of sun.

Verification: a green plant is a plant which has green pigment (chlorophyll) which can use for absorb the energy from the sun light with the certain width of the wave which reflect the green wave.

CHAPTER III

RESEARCH METHOD

This chapter will discuss about the development of this research method, some of them are, 1) Development Method, 2) Model of development, 3) Procedure of development, 4) Product validity, and 5) Product Experiment.

A. Development Method

Method that use in this research is research and development. This is a research method which is used to produce a certain product and to examine the effectiveness, efficiency, and the interesting of the product.¹

To get the certain product should use a research that having characteristic of analytical need to examine the effectiveness of a product in order to have a good function in the general society, so that the experiments is very need to examine the effectiveness of a product. So, the experiment and development have to has characteristic of gradual or longitudinal.

B. Model of development

There are two models of this research development, those are:²

1. Conceptual model, a model which has analytical character which can explain the components of product which will be develop and relevance between the components.

¹ Sugiyono, *Metode Penelitian Kuantitatif, Kualitatif dan R&D* (Bandung: CV. Alfabeta, 2011), page. 297.

² *Ibid.*, page. 199-200

2. Procedural model, this is a descriptive model which describe about the procedural steps which have to be followed to produce a certain product.

Appropriate with the explanation of the models above, this developing model using the procedural model, or using the development learning model of Walter Dick & Lou Carey (2001) which has 10 executing steps of research strategies and development. From 10 steps of learning design there are only nine steps that use this in development model. This is done with consideration that the development of science monopoly as a learning media which is only use as an experiment prototype product. The 10th steps (summative evaluation) did not do because it is out of the learning system, so that's why it did not use in this development.

Dick, Carey, dan Carey (2001) regarded instructional design as a system and considers learning as a systematic process. In fact, the approach of systematical works expressed as a model system.

Dick, carey, dan carey clarified that the approaching system are always refers to the Instructional systems development/ISD. Talking about the design then goes into the process, and if you use the term instructional design (ID) it will be refers to the instructional system development (ISD), the stages of analysis, design, development, implementation, and evaluation.

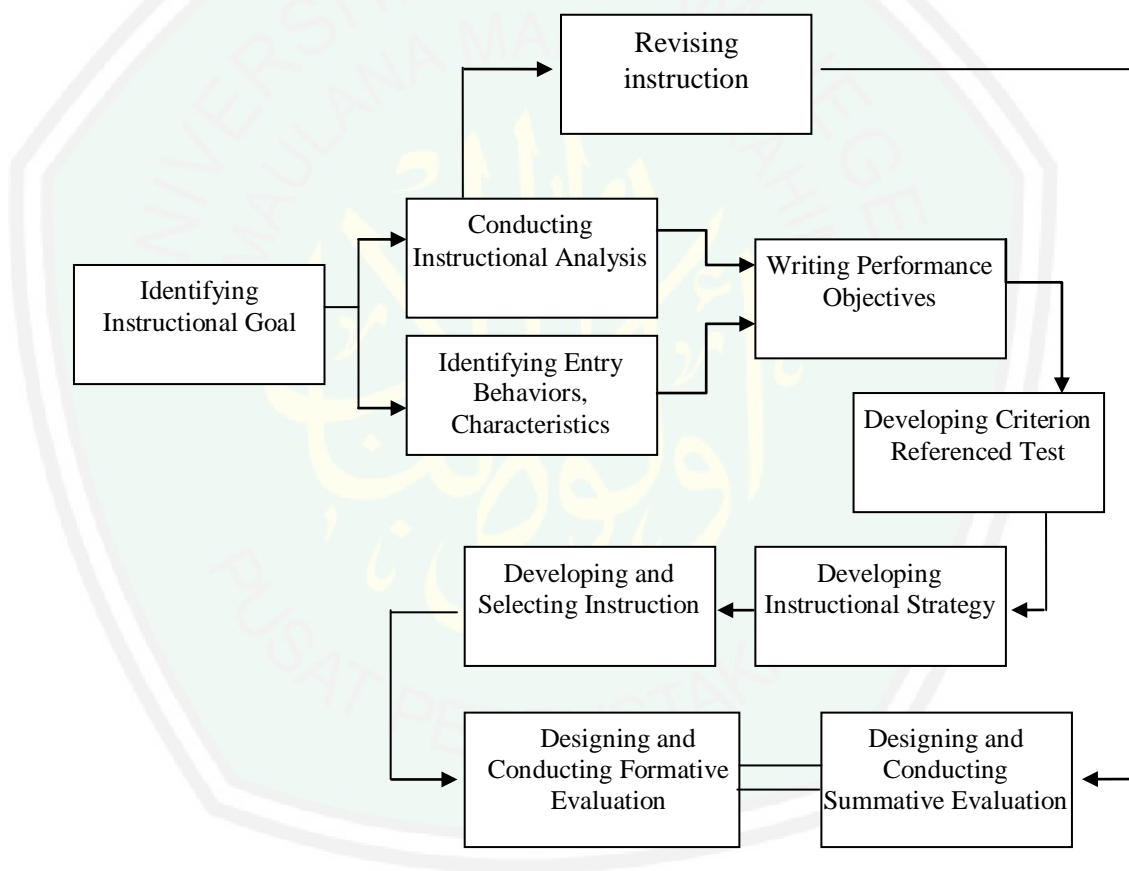
Using Dick & Carey model in the development of a subject is intended to:

1. At the beginning of the learning process of the students, they will be able to do any things related to the matter at the end of the lesson.
2. Existence of the linkage between each of the components, especially the learning strategies and learning outcomes desired.

3. Describe the steps that have to be do in planning instructional learning design.

The steps of model development based on Dick & Carey can be illustrated in adaptations chart of Walter Dick & Lou Carey as follows.³

Picture 3.1
Drafts Learning Model Dick & Carey
(Adaptation Dick & Carey, 1978)



Steps to approaching the learning design system of Walter Dick and Lou Carey described above as follows.⁴

³ Trianto, *Model Pembelajaran Terpadu dalam Teori dan Praktek* (Jakarta: Prestasi Pustaka, 2007), page. 62

⁴ Punaji Setyosari, *Metode Penelitian Pendidikan dan Pengembangan*, (Jakarta: Kencana Prenada Media Group, 2010), page. 201-202

1. Identifying Instructional Goal (Identifying the General Purpose of Learning).
Doing a need analysis to determine the purpose of the program or product to be developed.
2. Conducting Instructional Analysis (Undertaking the Assessment of Learning).
Doing analyze of learning, which includes the skills, processes, procedures, and learning tasks to achieve the learning objectives.
3. Identifying Entry Behaviors Characteristics (Recognize the Behavior and Characteristics of Students). Students analyze and contexts, which includes the ability, attitude, and baseline characteristics of learners in a learning setting. And, also including the characteristics of the learning setting in which new knowledge and skills will be used. Step (2) and (3) can be performed either sequentially or concurrently (simultaneously).
4. Writing Performance Objectives (Formulate Specific Learning Objectives).
Describe the general objectives into more specific objectives that form the formulation of performance objectives, or operational. This picture reflects the operational formulation of special-purpose programs or products, procedures are developed. The objectives specifically provide information for developing test items.
5. Developing Criterion-Referenced Test (Developing Benchmark Test Reference Point). Developing assessment instruments, which are directly related specific objectives.

6. Developing Instructional Strategy (Developing Learning Strategies).
Developing learning strategies, specifically to help students to achieve specific objectives.
7. Developing and Selecting Instruction (Developing and Selecting Instructional Materials). Developing and select instructional materials, which in this case be: printed materials, manuals both for learners and learners, and other media that are designed to support the achievement of objectives.
8. Designing and Conducting Formative Evaluation (Designing and Implementing Formative Evaluation). Formative evaluation is conducted during the learning process takes place with a view to supporting the process of increasing the effectiveness. Under certain conditions, the developer is quite up to this step. Dick & Carey, recommends a formative evaluation process consists of three steps:
 - a. The test prototype material individually (one-to-one trying out).
 - b. The trial of small group consisting of six to eight subjects.
 - c. The field trials involving all subjects in class (a whole class of learners).
9. Revising Instruction (Revising Instructional Materials). Revisions were done to the process of learning, procedures, programs, or products associated with the previous steps. Revisions were made to the seven steps, namely: general purpose learning, analytical learning, beginning behavior, performance, or performance objectives, test items, learning strategies, and learning materials.
10. Designing and Conduct summative Evaluation. After a program or process development has been developed the next step is to conduct a summative

evaluation. Summative evaluation conducted to determine the level of effectiveness of the overall program compared to other programs.

C. The Developing Procedure of Instructional Materials

Based on the model systems approach to instructional design Dick & Carey, as mentioned above, then the development of procedures in this development of research following the instructed steps in the design model as follows:⁵

1. Identifying General Purpose of Learning (Identifying Instructional Goal)

Conducting with attention and doing an assessment of the needs of students, through analysis of needed (need assessment) students of 5th Grade suitable with the demand of the curriculum.

The first step was to identify the common goal of science learning by doing a need analysis to determine the objectives. This step is meant to determine what it wants to be done after the students take part in science learning (goal instruction). Common goals based on those identified needs analysis, curriculum subject, experts of lesson study suggestion.

To get a description of the capabilities expected qualifications achieved by students after participating in the Natural Sciences learning process of 5th grade students, can be done by reviewing the curriculum of Natural Sciences, which refers to government ministerial regulation No. 2 of 2008 concerning the competency standards of graduated students.

Analysis of standards of competence and basic competences of Science subjects in the first semester of the 5th grade are as follows:

⁵ *Ibid.*, page. 201-202

Table 3.1.
The Purposes of Learning in the First Semester of 5th Grade About
Photosynthesis SD / MI

Competency Standards	Basic competence
Life Processes and Living Things 1. Identify the function of human and animals organs	1.1 Identifying the function of human respiratory system 1.2 Identifying function of animal respiratory system such as fish and worm 1.3 Identifying the function of human digestive system and the connection with the foods and health 1.4 Identifying human blood circulations system 1.5 Identifying irritation of human blood circulations system
2. Understanding how green plants make their food	2.1 Understanding how green plants make their food 2.2 Describe the human dependence on animals and green plants as the source of food
3. Identify how living things adapt to the environment	3.1 Identify animal adaptation to a particular environment to maintain their life 3.2 Identify plant adaptation to a particular environment to maintain its life
Objects and Its Character 4. Understanding the relationship between the properties of the constituent objects and object properties change as the result of a process	4.1 Describe the connection between the material properties of the constituent materials, such as yarn, cloth and paper. 4.2 Concluding the results of the investigation on the changing nature of the object, either temporary or permanent

2. Doing Learning Analysis (Conducting Instructional Analysis)

3. Doing by: (1) classify the formulation of learning objectives by type domains (psychomotor skills, intellectual skills, verbal information, attitudes), and (2) recognize learning analysis techniques that good to

correct learning sharply that should be done to achieve objectives until with characteristics lesson that be research object, the objectives focused on the achievement of intellectual skills. Here is the analysis of learning in the following chart:

Table 3.2.
Results of the Analysis connection and Indicators Basic Competence of Learning Science in the first Semester of 5th grade in Terms of How Plants Make Their Food

Competency Standards	Basic competence	Topic	Indicator
2) Understanding how green plants make food	2.1 Identify the way the green plants make food	How Plants Make Food 1. Process of photosynthesis 2. Material and the results of the process of photosynthesis 3. where the plants store food reserves	1. Understanding the process of photosynthesis 2. Knowing the ingredients needed to make the food plant 3. Knowing the process of converting water and carbon dioxide into carbohydrates 4. Knowing the result of photosynthesis 5. Knowing a place to store food reserves in plants and provide examples
	2.2 Describe human dependence on animals and green plants as a food source	1. Plants as a food source 2. Environmental	1. Understanding green plants as a food source 2. Mention parts of the plant that can

		benefits of plants and living creatures	be used 3. Knowing that plants have benefits as flavorings, medicines, clothing materials and household appliances
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3. Recognize Behavior and Characteristics of Students (Entry Identifying Characteristic Behaviors).

Doing with provide pre-test and post-test to the study sample.

4. Formulating Learning Special Objectives (Writing Performance Objectives).

Specific learning objectives is a statement about the ability or behavior that is expected to be held by the students after participating in a particular learning program. ability or behavior must be specifically formulated and operations that can be observed and measured. Thus, the level of achievement of students in existing behavior in specific learning objectives can be measured by a test or other measuring device.

Writing specific learning objectives is used as a basis for developing learning strategies and develop learning test grating.

Based on the analysis of the standard of competence and basic competences can be formulated objectives 5th grade science teaching how plants make food material is as follows:

Table 3.3
Basic Competencies and Learning Objectives of the Basic
Competence to Accomplish Student in Science of 5th grade Subject Matter
Photosynthesis

Basic competence	Learning Objectives/Purpose
1. Identify how green plants make food	1. Students are able to explain the process of making food in plants (photosynthesis)
2. Describe human dependence on animals and green plants as a source of food	2. Students are able to mention the necessary ingredients to make the food plant
	3. Students are able to explain the role of chlorophyll in the process of making food
	4. Students can mentions the results of photosynthesis
	5. Students were able to show where plants store food reserves and provide examples
	6. Students can explain the plant as a food source
	7. Students are able to explain the importance of green plants for humans and animals as a food source.

5. Develop a Reference Benchmark Test Items (Developing Criterion Referenced Test)

To measure the ability of students to achieve what has been stated in the objectives learning, as in the process of collecting data and information that can be used to revise the learning process. In the development of this measurement is made through a written theory test, the specific learning objectives to be achieved largely includes cognitive domains. Besides the

written theory test, practice test is also developed to measure psychomotor skills students.

6. Develop Learning Strategies (Developing Instructional Strategy)

This phase is an effort to select and develop general learning components and procedures that will be used to teach the students so the students can learn easily with their characteristics in achieving the learning objectives that have been set. The main component learning strategies include the following activities: (1) Pre-learning activities, which seek strategies conditioning and mental readiness when students will follow learning activities. (2) Presentation of information, the strategy to develop the materials content of presentation to be given to students to achieve the learning objectives. (3) The role of the students, the strategies effort mental engagement of students. (4) Learning closing, by evaluation the strategy to see the understanding and achievement objectives of students in learning process.

7. Developing and selecting instructional materials

Basic steps of science learning activities is the pace of development and the selection of instructional materials. The results of product development in the form of printed material, in the form of a set of scientific monopoly game (3-dimensional) with a flannel material and color that attract the fifth grade students of SD / MI

8. Designing and conducting formative evaluation

Based on the steps to select and develop the instructional materials, the next step is to design and implement formative evaluation. Formative

evaluation was conducted to obtain data in order to revise the learning material produced to make it more effective. This formative evaluation did by two groups, they are evaluation of an expert person and evaluation of the science monopoly media users (for students). This evaluation includes expert test material / content of the field of study to find the truth and validity of the content / material presented, instructional media specialists to acquire the suitability of the design developed, and the evaluation of the effectiveness of learning experts to obtain monopoly game media science used at the time the learning takes place. While for the evaluation of the students divided into three steps that will give to each student (*one on one evaluation*), small group evaluation, and field evaluation.

9. Revising instructional materials (Revising Instruction)

Data obtained from the formative evaluation were collected and interpreted to solve the difficulties faced by students in achieving the learning objectives also to revise the learning to be more effective.

The both phase of the above will be presented in the results of the development which includes the presentation of tryout data teaching materials, analysis of tryout data and revising product development.

Procedural steps in the research and development that are classified by Walter Dick and Lou Corey is similar to *Nana Syaodih* description of the implementation procedure, the research and development there are several methods used are descriptive, evaluative, and experimental.

This research was conducted with collect preliminary data about the condition of the textbooks used by the school intends to be reviewed. Then recognize the user's condition is students before conducted tryout then identify the deficiencies that exist in the learning that has lasted with using textbooks in order to analyze students' needs and then produce a product and evaluate it through a set of trials and the last phase is to test the attractiveness, effectiveness, of products that will produce in this study.

10. Designing and conducting formative summative

After revised monopoly game media conducted summative evaluation. Summative evaluation conducted to obtain data to revise the learning material will be produced to make it more effective. Summative evaluation conducted on two groups, that are evaluation of experts includes test by expert content materials subjects to see the truth content of the material presented, design experts to get god design that development, while the evaluation for students only using one phase of the test field (field evaluation). If in this phase of the students are enthusiastic in using the monopoly game media, then revising phase of learning materials was not done.

D. The Validation of Product

Activity at this stage to determine the feasibility of early drafts generated from the development stage so that later can be improved to improve products in the form of a media monopoly game science. Step validation in terms of critic and suggestion about product of science monopoly. After that, based on the critic and

suggestion, the product development have to be revised in order to be an accurate product for learning science.

In order to get good achievement in validations, needs precision in choosing design of validity, subject validity, types of data, instrument of accumulating data, and technical analysis data of science monopoly development. Specifically, it will be explained in the following explanation.

1. Design of Validation

Validation is being purposeful to get a complete data for product renovation or the product completeness which will produce. Beside that it is also for determining the developing product that appropriate to try to the 5th grade students. Validation did through the evaluation by an expert and validation by the teacher of the certain lesson. Here the guidance indicator as the form of evaluating validation of content or materials and the learning media as follows:

Table 3.4.
Indicator of Questioner Direction

No	Validator	Assessment aspect
1.	An expert in exact lesson	1. Content of material organization 2. Evaluation 3. Media usage
2.	An expert in media learning	1. Suitability of media with SK, KD, learning purpose, material and time allocation 2. Quality of physical media 3. Quality of technical usage of the media 4. The interest media to use again in another lesson
3.	Exact teachers	1. Accuracy of learning media 2. Easiness usage of the media in a learning process 3. Suitability of the media with the lesson

		4. Students motivation in a learning 5. Pre-test question clarity and post test
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2. Subject Validation

This step of validation involving three subject validators, those are An expert of science lesson, An expert of learning media, exact teachers. The first validation was doing a consultation to the person who are expert in the learning media, then the person who is expert in science material and continue by consultation to the science teachers. The qualifications of each subject validator are explained as follow:

a. An Expert Person in Learning Media

An expert person in media learning determined as the examiner of science monopoly media design. We have to choose an expert person who has a high background education at least magister (S2) he is Mr. Akhmad Abtokhi, M.Pd. it was determined based on the consideration as follow:

- 1) Has a high background education at least magister (S2)
- 2) Had ever being an assessor of a learning media
- 3) As a lecturer and science lesson for elementary
- 4) Ready to be an examiner developing monopoly media as product of learning science for 5th grade students of MI Al Maarif 02 Singosari.

Some steps that have done in a review step of an expert person in media learning are:

- 1) Visiting someone who are expert in the media learning
- 2) Explaining the development process that have done

- 3) Giving the result of the product that have been developed
- 4) Through the instrument and survey, asked to the expert person of the media learning about his idea or comment about the developing product from the quality and appropriateness.

b. An Expert Person in Content/Material of Science Lesson

Someone who are expert of the subject in an experiment is a someone who have a high background education at least magister (S2) whether formal or non-formal in science, he is Mr. Agus Mukti Wibowo, M.Pd who is expert in characteristic of science lesson for elementary, especially in mastering photosynthesis at the 5th grade.

Some steps that have done in a reviewing an expert of content in this lesson are:

- 1) Visiting someone who are expert in science content especially the way of plant in producing foods
- 2) Explaining the development process that have done
- 3) Giving the result of the product that have been developed
- 4) Through the instrument and survey, asked to the expert person of the media learning about his idea or comment about the developing product from the quality and appropriateness.

c. Teacher of Natural Science

An expert person in a learning process who were give the response and evaluation to the learning media is someone who has high background education at least (S1) he is Mr. Fathan Fahmi, S.Pd, a science teacher of 5th grade who are

teaching at MI Al Maarif 02 Singosari everyday. A selection of an expert person in learning process based on the consideration that the person has many teaching experiences and also understand more about the curriculum of science lesson for elementary. An expert, gave a comment and suggestion generally through the material in the science monopoly as the learning media.

d. 5th Grade Students at MI Al Maarif 02 Singosari

Subject individual experiment, small and big group took from the students of 5th grade at MI Al Maarif 02 Singosari and represent the group who has low ability, intermediate ability, and high or advance abilities viewed from the score of their daily examination and the students ability in science subject. The selections of experiment subject are consideration of the science teacher that the selected students are easy to be interviewed.

3. Types of data

There are two types of data which has gotten from the result of validation through the science monopoly as the learning media which has been developed, the first data is a quantitative data which gotten from the result of scoring in the form of percentage to know the appropriateness or the validity of a developed learning media. The second data is a critical qualitative data, response, or suggestion from the validator.

4. Data Collection Instrument

Instrumen yang digunakan untuk mengumpulkan data penelitian ini adalah instrumen pengumpulan data kuantitatif berupa angket yang terdiri dari :

- a. Validation survey or response from an expert of content/material

- b. Validation survey or response from an expert of media learning
- c. Validation survey or response from a science teacher
- d. Validation survey or response of students after using the media

Using the Linkert scale with four alternative answers, as follow:

- a. Score 4, very accurate answer, very valid
- b. Score 3, if accurate, valid
- c. Score 2, if quite accurate, quite valid
- d. Score 1, if does not accurate, not valid

Instruments of collecting qualitative data in form of comment papers, suggestions or critic from the validator.

5. Technic Analysis Data

Technic analysis data that used for analysis quantitative data of the validation result from the person who are expert in material, in learning media, and learning process using the technic percentage calculation of score items in each answer from each questioner. To determine the percentage can use the following formula:⁶

$$P = \frac{\sum x}{\sum xi} \times 100$$

Explanation:

P = Appropriateness

$\sum x$ = The number of evaluators answer score (real value)

$\sum xi$ = The number of highest score (expectation value)

⁶ Suharsimi Arikunto, *Dasar-dasar Evaluasi Pendidikan* (Jakarta: Bumi Aksara, 2003), page. 313

While the basic and the guide for determining level of validation and in deciding basis of revising the subject using the criteria qualification of evaluation as follow:

Table 3.5
Criteria Qualification of the Appropriateness of Learning Media Based on the Percentage⁷

Percentage (%)	Appropriateness criteria
90 – 100	Very appropriate, do not need to revise
75 – 89	Appropriate , do not need to revise
65 – 74	Appropriate enough, need revise
55 – 64	Less appropriate, need revise
0 – 54	Not appropriate, totally revise

If the validation score from the result of the expert person in context and material, the expert of learning media and the expert of learning process that have to be fulfilled at least 65, so that the media which will be develop can be used as the learning media in a school activity. The analysis result can be a critic, suggestion and response from them which used as the material for revising the developing product.

E. Product Experiment

1. Product Experiment Design

Doing some experiments to determine the level of product interest, validation, and appropriateness. In aspect of education, product design such

⁷ Sugiyono, *Metode Penelitian Pendidikan Kuantitatif, Kualitatif dan R & D* (Bandung: CV. Alfabeta, 2009), page. 135

as new teaching method can be try directly, after validation and revision. The level interest, validity, and product appropriateness are known through the result of analysis of a trial activity which done through some steps, such as:

- a. Review by the expert person of context/materials
- b. Review by the expert person of learning media
- c. Review by the expert person of learning
- d. One-on-one evaluation
- e. Small evaluation
- f. Field evaluation

In a development activity, the developers may be only pass and stuck at the step of one-on-one evaluation, or continue and stop until the step of small evaluation, or until the last step (field evaluation). This is depends on the urgency and the needed data through the evaluation.

1) The First Stage is the One-on-One Evaluation

This individual evaluation is represent by 6 students with some criteria as follow:

- a) Include the active student at the 5th grade of MI Al Maarif 02 Singosari
- b) Respondent from one-on-one evaluation which consists of 3 people decided based on their criteria that the respondent represent the target group characteristic which are include in the high category, high, intermediate and low reviewed from the daily scored result.

- c) Student willingness as the source of data results in developing science monopoly as the learning media.

2) The Second Stage is Small Group Evaluation

Respondent in this evaluation are 12 students. Determining the subject done randomly representing each criteria of the participant which include in the high category, intermediate, and low reviewed from the daily result of the daily scored.

3) The Third Stage is a Field Evaluation

Which consist of appropriateness of learning evaluation and product evaluation to determine the level of students understanding before and after using the media which has been develop and to determine is the new learning method is more effective and efficient than the latest learning method. mengetahui apakah metode mengajar baru lebih efektif dan efisien dibandingkan metode mengajar yang lama. The respondent of the field evaluation taken from all of the members of 5th grade students.

To examine it, we have to make an experiment plan with the pretest-posttest control group design.⁸

Table 3.6
Design Experiment With the Control Group

Group	Pre-test	Manner	Post Test
Experimen	O ₁	X ₁	O ₂
Control	O ₃	X ₂	O ₄

Explanation:

⁸ *Ibid.*, page. 303

X_1 : learn using science monopoly media

X_2 : learn without using monopoly media or using the latest learning method.

O_1 : the first score of the group experiment using the product science monopoly

O_3 : the first score of control group without using product science monopoly (using the latest learning method)

O_2 : group presentation experiment after using the science monopoly

2. Subject of Experiment Product

Development product of experiment subjects are the students of MI Al Maarif 02 or the developing product user. The determined target as the experiment subjects are the 5th grade students of MI Al Maarif 02 Singosari period 2013-2014.

3. Types of Data

The types of data in this development is a quantitative data in the form of information which gotten from questionnaire used and student learning test achievement after using the science monopoly game. The results of the test are pre test and post test of the students. The quantitative data are collected through the questionnaire and test.

4. Instrument of Accumulating Data

Instrument used to obtain a number of expected data:

a. Questionnaire

Questionnaire made containing the question list which use to get the information or response from the students. The content of the questionnaire are questions related to the component or condition of development science media game which has been produced.

Table 3.7
Indicator of Questionnaire Instruction of the Students through the Science Monopoly Game in the Chapter of Photosynthesis

No	Variabel	Indicator	Number of Instrumen
1	Science Monopoly Game	a. Interesting media	1,2
		b. The easiness material and questions	3,4
		c. Design monopoly media	5,6,7,8
		d. The role of playing science monopoly game	9
		e. The usage of the media in the next learning process.	10

The model questionnaire for students to get their response in the form of multiple choice questions with four possible answers, are:

- 1) Selected A answer, very appropriate/very interesting/understandable/very suitable/very happy/very easy.

- 2) Selected B answer, if appropriate enough/quite interesting/quite understandable/quite suitable/quite happy/quite easy.
- 3) Selected C answer, if incorrect enough/interesting enough/understandable enough/suitable enough/unhappy enough/difficult enough.
- 4) Selected D answer, if incorrect/not interesting/difficult to understand/not appropriate/unhappy/difficult.

Measuring scale that used in the questionnaire is a Likert scale. Next, to determine the percentage, we have to use technical counting of the percentage score items on each answer of the questionnaire. To determine the percentage we can use the following formula:⁹

$$P = \frac{\sum x}{\sum xi} \times 100$$

Explanation :

P = appropriateness

$\sum x$ = the number of answered choice

$\sum xi$ = the number of the highest answer

b. Test of Students Study Result

Study result measured by 10 formative questions and 5 essay questions.

The score of each items determined using the following formula:

$$\text{Nilai Skor per item} = \frac{\text{Nilai Minimal}}{\text{Jumlah Soal}}$$

So that the score of each multiple choice question = 2

⁹ Suharsimi Arikunto, *loc. cit.*

Score of each essay question = 16

The result criteria of student pretest/posttest determined using this following formula:

Score = the number of correct score x 2

(for multiple choice question)

Score = the number of correct score x 16

(for essay question)

This is draft of test:

Table 3.8
Terms of Matter of the Multiple Choice Questions (Pre Tes)

Competency Standards	Basic competence	Questions Indicator	Question number
Understand about how the process of photosynthesis	<ul style="list-style-type: none"> Identifying the process of photosynthesis 	<ul style="list-style-type: none"> Understanding the process of photosynthesis 	1
		<ul style="list-style-type: none"> Understanding the element of photosynthesis for food production 	2
		<ul style="list-style-type: none"> Understanding the building-up of water and carbon dioxide become glucose 	3
		<ul style="list-style-type: none"> Understanding the result of photosynthesis 	4
		<ul style="list-style-type: none"> Understanding the place of foods stockpile in the plant and give the example 	5

	<ul style="list-style-type: none"> Describe the dependence of human and animal to the green plants as the source of foods 	<ul style="list-style-type: none"> Understanding the green plants as the source of foods 	6
		<ul style="list-style-type: none"> Mentions the useful parts of plants 	7
		<ul style="list-style-type: none"> Understand that plant has many advantages such as, medicines, clothes, house equipment, and furniture. 	8,9,10

Table 3.9
Terms of Matter of the Essay Questions (Post Test)

Competency Standards	Basic competence	Questions Indicator	Question number
Understand about how the process of photosynthesis	<ul style="list-style-type: none"> Identifying the process of photosynthesis 	<ul style="list-style-type: none"> Understanding the process of photosynthesis 	1
		<ul style="list-style-type: none"> Understanding the result of photosynthesis 	2
		<ul style="list-style-type: none"> Understanding the element of photosynthesis for food production 	3
	<ul style="list-style-type: none"> Describe the dependence of human and animal to the green plants as the source of foods 	<ul style="list-style-type: none"> Understanding the green plants as the source of foods 	4
		<ul style="list-style-type: none"> Understand that plant has many advantages such as, medicines, clothes, house equipment, and furniture. 	5

terminated based on the result of KKM on the science lesson which decided by MI Al Maarif 02 Singosari is 70 so:

Pretest/posttest score < 70 = not pass

Pretest/posttest score \geq 70 = pass

5. Technic Analysis Data

Technic analysis that used to processing the data from the result of product evaluation is a descriptive analysis and content analysis. Both of these technics used base on the data characteristic which get from the process of collecting data which wanted as the explained above.

- a. The data of study result from both of control and experiment class will be analyze through the paired t-test sample the computer program helped namely SPSS 16.
- b. Pre-test and post-test analyzed using t-test correlation. To know the different significant between control (class which doesn't use media science monopoly) class and experiment class (class which used media science monopoly). T-test formula with the significant level 0.05 as follow:

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2r\left(\frac{s_1}{\sqrt{n_1}}\right)\left(\frac{s_2}{\sqrt{n_2}}\right)}}$$

Explanation¹⁰:

\bar{X}_1 = Average of the 1st sample (experiment class)

¹⁰ Sugiyono, *Metode Penelitian Pendidikan* (Bandung: Alfabeta, 2010), page. 139

X_2 = Average of the 2nd sample (control class)

s_1 = 1st Standart deviation sampel

s_2 = 2nd Standart deviation sampel

S_1^2 = the 1st varians sampel

S_2^2 = the 2nd varians sampel

R = correlation score between data x_1 and x_2

n = number of sample

t = the counted core of t

The analysis result of data about the information of learning science which has done to the 5th grade students of MI Al Maarif 02 Singosari used as the basic to develop the media of science monopoly game. While, the result of scoring analysis data, response from the expert people used as the material to revise the development product.

CHAPTER IV

CLARIFICATION DATA OF THE RESEARCH

In this chapter, there are two things that will be clarified related with the development result. Those are: 1) Description result development of learning media; and 2) Presenting validation of data. Description of the development result of science monopoly media explained the contents of the result of development of monopoly. While in presenting validation of data containing the result of product evaluation which consist of three things, those are: 1) Data clarification; 2) Data analysis; and 3) Development of product revision. All of them are presented consecutively based on the ideas of the people who are expert in learning material, in learning media, science teachers and individual experiment, small experiment, and big group experiments (field evaluation).

A. Description Form of Science Monopoly about Photosynthesis

Description from the result of the experiment is a science monopoly game about living plants, explained the characteristic of product development. Learning science monopoly game regarded from two aspects, those are aspect of the science monopoly game contents and aspect of science monopoly game design.

Science monopoly game contents included a guide book, a set of monopoly game, and material books.

1. A guide Book





A guide book of science monopoly game about “living plants” consists of 2 sub components they are introduction and part of the contents.





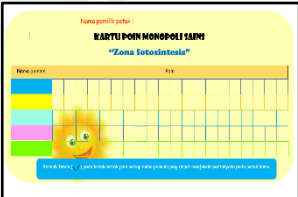

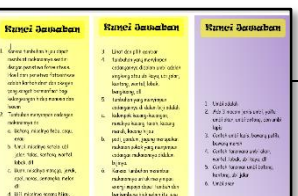
The part of introduction consists of the introduction of description of the equipment that will be used in playing monopoly, such as pawns, dice, quiz cards, question and the key answer cards, point cards, a guide book, material book, get it card, money, and information cards.

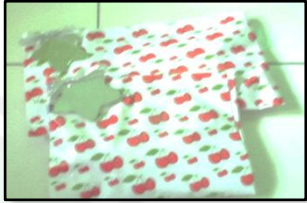
While in the part of the contents are explaining the instruction of playing science monopoly game. The result development of science monopoly game as follows:

- 1) Part of introduction that describe the equipment of science monopoly game.

Table 4.1
Describe the Equipment of Science Monopoly Game

No.	The Equipment of Science Monopoly Game	Picture
1	Pawns	
2	Dices	
3	Money	
4	Monopoly Slot	

5	Material Book	
6	A Guide Book	
7	Get It Card!	
8	Quiz Time Card	
9	Point Card	
10	Information Cards	
11	Questions Cards	

12	Reward	

2) Part of the contents of science monopoly game's guide book.

The instructions or steps to play science monopoly game are:

- a. Look for your friends to play this game together. There should be 6 people in a group. 5 people should be the members and 1 should be the captain of the group. After you got all of them the next step is prepare the monopoly instruments.
- b. Decide the 1st player to the last player with your own way. After that, distribute the monopoly money. Each player will get the money which already decided in monopoly rule. As follows:
 - Rp 500 = 10 Sheets
 - Rp 1000 = 10 Sheets
 - Rp 5000 = 5 Sheets
 - Rp 10000 = 3 Sheets

So, the total of money that distributed to each player is 70000.

- c. Each player may buy a slot of monopoly first on the slot that he has passed base on the price of the slot. If each player already has their own slot, they may buy the rest of the slots again.
- d. If your pawn stands on an owned slot, take 1 card from the owner of the slot then answer with clear voice. You only have 1 to 2 minutes time to answer the question. If you missed it, the question will be given to the other players.
- e. If you can answer each question given by the owner of the slot, you are allowed to get 1 point. A question answered equal 1 point (for everyone who can answer the question)
- f. Quiz time slot, if your pawn stands on the slot of the quiz time, take 1 card and answer the quiz that written on the card. If 1 quiz answered equal 1 point.
- g. Each player who has bought the slot will get an information cards, the function of this card is to help you when you have difficulties in answering the questions. You can ask the owner of the information card base on the quiz questions that you have gotten.
- h. On the slot of get it card, each student may take the money base on something written in the card. If you get reward, you will get the money but, if you get a punishment you have to pay or give the money back base on the punishment that you get.
- i. Visit science doctor, if you stop on the slot of science doctor, wait until the second round of the game. As the punishment, choose 1 question on the monopoly slot that you choose.

- j. Point cards, each slots owner get 1 point. Each point card is the name of the players and their point slot. In the end of the game, a player who got the highest number of points will get reward.

2. The set of monopoly game

This part are consist of,

- a. Pawns
- b. Dices
- c. Money
- d. Quiz time cards
- e. Get it card
- f. Information card
- g. Point card
- h. Question and key answer cards
- i. A guide book
- j. Material book

3. Material Book

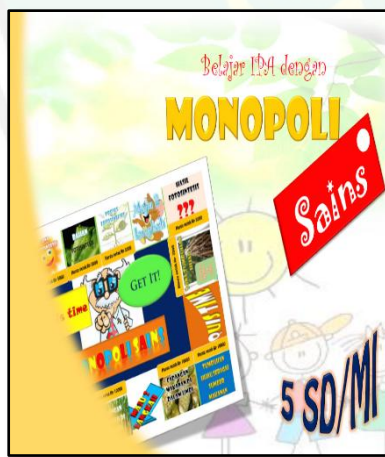
The material book consists of: 1) the title of book (cover); 2) competency standards and basic competence; 3) mind mapping; 4) introduction; 5) material about living plant; 6) reference.

Part of the title placed in the beginning of the book to inform the players of the science monopoly, so that the players will understand indirectly about what

the contents of the book is. Competency standard and basic competence should be reach in the material or after using this science monopoly game. Introduction is also included ayat Al-quran and understanding the basic of photosynthesis in a green plant. The point part is the content or the living plant material, in this part will be explain about living plant material, photosynthesis process, how the plants save the stockpile foods and the function of plant for the environment, human and animal.

The last part is references, this is containing the list of books or another sources used by the researcher as the source of the living plant material which is placed in the last pages of the book. Students can search the other references or literatures written in the reference of the book.

a. Picture 4.1 Cover (the book title)



b. Picture 4.2 Competency Standard and Basic Competence



c. Picture 4.3 Mind Mapping



d. Picture 4.4 Introduction

Peristiwa fotosintesis merupakan suatu karunia dan bukti kekuasaan Tuhan Yang Maha Kuasa. Betapa tidak, karbon dioksida yang ada di udara dapat diikat sehingga menjadi bahan makanan. Selain itu, oksigen yang dihasilkan dari pemecahan air merupakan sesuatu yang sangat dibutuhkan oleh makhluk hidup. Tanpa fotosintesis sesungguhnya tidak akan ada kehidupan sebab tidak ada makanan dan juga tidak ada oksigen. Kamu tentu mengetahui bahwa makanan tersebut diperlukan oleh makhluk hidup untuk tumbuh dan berkembang. Oksigen juga diperlukan dalam proses respirasi (pernapasan) untuk memperoleh energi, sehingga makhluk hidup dapat beraktivitas dalam kehidupan sehari-hari.

Orang yang beriman sadar bahwa segala sesuatu ini diciptakan Allah agar ia memuji-Nya. Sadar akan hal ini, seseorang yang menyakinkan keadaban kebab ketika sedang berjalan-jalan akan mengungkapkan Allah seraya mengatakan, "Maa syaa Allahu, laa quwata illaa billah (segalanya atau kekekalan Allah semua ini terwujud, tidak kekuatan kecuali dengan pertolongan Allah)" (QS: Al-Kahf, 18: 39)

e. Picture 4.5 Content of Material

f. Picture 4.6 References

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Aspect design of science monopoly game consists of, 1) Design of package game; 2) Science monopoly game lay out design

1. Design of Package Game

Packaging science monopoly game is using flannel cloth application. A set of science monopoly game placed in a box made from a carton paper which covered with flannel cloth. So that the equipment such as get it cards, quiz time cards, money, and pawns placed in that box. All of the saved in a bag made from flannel cloth with the bright color written “photosynthesis” and “science monopoly game” in front and back of the bag to make the user understand about the content of the bag.

- a. Picture 4.7 Box for saving the set of science monopoly game.



- b. Picture 4.8 Boxes to save the money, pawns, quiz time and get it cards.



- c. Picture 4.9 Bag to tidy up a set of science monopoly game including the guide book and the material book.



2. Physical Design of Science Monopoly Game

The physical design is explained about the elements used to make the monopoly media.

- a. Get it and quiz time cards are made from glossy photo paper so that the cards seem little bit dazzle.
- b. Money, the shape of the money is rectangle using art paper 100 gr, the art paper used in order to create the best texture of money.
- c. Material book, cover of the book made from glossy photo paper, then the content of the book using HVS paper 80 gr. To create the better quality of writing and color.
- d. A guide book, designed like a table calendar, it makes the player easier to read and understand the game contents. It made from type of art paper 150 grand 250 gr.
- e. Pawns, made from flannel cloth, in the shape of Paris tower miniature, and carton paper. The function of the flannel cloth here is as the bottom layer of the pawn, Paris tower miniature as the bracket pole. Pawns in the form of flower and animal are made from motif and simple flannel cloth.
- f. Dice, made from the flannel cloth and carton paper with square shape.

- g. The slot game made from glossy photo paper and glory paper. Both of the paper types used because of the glossy effect of the paper.

B. Validation of Development of Science Monopoly Game About Photosynthesis

Validation through the science monopoly media which had done by validator who is expert in learning media and expert in exact lesson on 11th of November 2013, while for exact teacher evaluation done on 28th of March 2014, individual evaluation and small group evaluation done December 2013, field evaluation (big group) done on 28th of March 2014. Evaluation data of the product development of monopoly game in 4 stages.

The data that have gotten from the evaluations are qualitative and quantitative data. Quantitative data gotten from the questionnaire evaluation using *Linkert* scale, while the qualitative data is the additional evaluation or suggestion from the validator, the result of the evaluated data analyzed using average score technic evaluation by the evaluator on each research item. This is data presented by subject validation:

1. Validation Results of Content Expert the Instructional Materials Validation

Validation of science instructional material with content experts was held on 11 November 2013. Validation carried out to faculty learning science and

State Islamic University of Maulana Malik Ibrahim Malang, he is Mr. Agus Mukti Wibowo, M.Pd.

The results of expert assessment and response by the contents of the instructional material science materials Photosynthesis is as follows:

Table 4.2
Evaluation Result by the Exact Material through the Science Monopoly Game on the Topic of Living Plants

No	Aspect of evaluation	Indicator evaluation	X	x _i	P (%)	Level of validation	Information
1	Organization of the content	1. The suitability purpose of learning using KD and indicator	4	4	100	Very valid	Not revise
		2. Determination of systematical material which prepared with the procedure of learning	4	4	100	Very valid	Not revise
		3. The clear prepared material	4	4	100	Very valid	Not revise
		4. The easiness level of prepared material through the	3	4	75	Valid enough	Not revise

		media					
		5. Determination of organizing material in the form of question that available in the card	3	4	75	Valid enough	Not revise
		6. The clear language in explaining the prepared	4	4	100	Valid enough	Not revise
		7. The mastery of prepared material	3	4	75	Valid enough	Not revise
		8. The accuracy of prepared material	3	4	75	Valid enough	Not revise
2	Question of evaluation	1. Suitability of evaluation questions with the material	4	4	100	Very valid	Not revise
		2. The number of question that given	4	4	100	Very valid	Not revise
		3. The easiness level of the evaluation questions with students understanding	4	4	100	Very valid	Not revise
		4. The clear language and terms used in the questions	4	4	100	Very valid	Not revise
3	The usage of media	1. Effectiveness in delivering materials	4	4	100	Very valid	Not revise

		using the science monopoly media					
		2. The usage accuracy of science monopoly media	4	4	100	Very valid	Not revise
		3. The interesting of the learning activity using the science monopoly media	4	4	100	Very valid	Not revise
		4. The easiness level of the game technic with the students understanding	4	4	100	Very valid	Not revise
		5. The effectiveness of learning using the science monopoly media	4	4	100	Very valid	Not revise
		6. The usage possibility of the media in the following learning	4	4	100	Very valid	Not revise
Total			68	72	94 %	Very valid	Not revise

Explanation:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$\sum x$ =Score answer by Mr. Agus MuktiWibowo M.Pd as validator

$\sum xi$ =Score of ideal answer

P =Percentage level of validity

Table 4.3
Distribution Frequency Level of Validity of the Expert in Science Monopoly as a Learning Media

Level of validity	F	%
Very valid	14	78
Valid enough	4	22

The chart above showed the data of validation result by the expert of science material through the development of science monopoly as the learning media at 5th grade of Islamic Elementary School about living plants is 78% stated valid and 22% showed the level of validity is enough.

Level of validity	Question items
Valid	1.1, 1.2, 1.3, and 1.6 2.1, 2.2, 2.3, and 2.4 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6
Valid enough	1.4, 1.5, 1.7, and 1.8

Here is the qualitative data which collected from the ideas, suggestions and comments from the expert of science material by an open statement related to the science monopoly media are explained in the following chart:

Table 4.4
Summary of Research Data on the Evaluation and Review of the Expert of Science

Components/position	Data Description	Suggestion/Comment
Material book	Systematic	Material in the book

	Material	should be repaired systematic and conceptually
--	----------	--

All of the data from the review result, evaluation and discussion with the expert of Instructional Materials become the base for revising in order to complete the components of science monopoly game and science lesson before examining the students as the user of developed science monopoly game.

2. Result Validation From The Expert of Learning Media

Validation of instructional materials with expert design held on 11 November 2013. Validation carried out to Mr. Ahamad Abtokhi, M.Pd.

The results of expert assessment and response to the design of instructional material science are as follows:

Table 4.5
Result Evaluation from the Expert of Learning Media Trough the Science Monopoly Game about Living Plants

No	Aspect of evaluation	Indicator of evaluation	X	X _i	P (%)	Level of Validity	Information
1	The suitability of the media with the Standard Competence, Basic Competence, purpose of learning, material, and time allocation	a. The suitability of science monopoly with the material	4	4	100	Very valid	Not revised
		b. The suitability of science monopoly with the learning purpose	4	4	100	Very valid	Not revised
		c. The suitability of the media with the Standard Competence and Basic Competence	3	4	75	Valid enough	Not revised
		d. The suitability of the					

		media with the time allocation	3	4	75	Valid enough	Not revised
2	Physical quality	a. Monopoly box <ul style="list-style-type: none"> • The accuracy of choosing the shape of monopoly box with the students character • The accuracy of choosing the box's size of monopoly with the students character • The accuracy of choosing the elements of monopoly with the students character • The accuracy of the box of monopoly color with the students character 	3	4	75	Valid enough	Not revised
			3	4	75	Valid enough	Not revised
			3	4	75	Valid enough	Not revised
			4	4	100	Very valid	Not revised
		b. Card <ul style="list-style-type: none"> • The accuracy of choosing the shape of the card with the students character • The accuracy of choosing the element of the cards with the students character • The accuracy of color with the students character 	4	4	100	Very valid	Not revised
			3	4	75	Valid enough	Not revised
			4	4	100	Very	Not revised

		<ul style="list-style-type: none"> The accuracy of the size of the card with the students character 				valid	
		<ul style="list-style-type: none"> The accuracy of alphabet size with the students character 	4	4	100	Very valid	Not revised
		c. Pawn and Dice					
		<ul style="list-style-type: none"> The accuracy of pawn shape with the students character 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> The accuracy of pawn elements 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> The accuracy of pawn colors 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> The accuracy of pawn size 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> The accuracy of dice size 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> The accuracy of dice elements 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> The accuracy of dice color 	4	4	100	Very valid	Not revised
		d. Guide and material books					
		<ul style="list-style-type: none"> Cover design based on the content of material 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> Kind of alphabet used 	3	4	75	Valid enough	Not revised
		<ul style="list-style-type: none"> shape of alphabet used 	4	4	100	Very	Not revised

		<ul style="list-style-type: none"> • pictures in the book based on the material 	4	4	100	valid Very valid	Not revised
		<ul style="list-style-type: none"> • choosing pictures which used in the book to attract the students 	3	4	75	Valid enough	Not revised
		<ul style="list-style-type: none"> • The accuracy of layout of picture on the book 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> • The accuracy of the picture size 	3	4	75	Valid enough	Not revised
		<ul style="list-style-type: none"> • The accuracy of color of the book 	4	4	100	Very valid	Not revised
		e. Money					
		<ul style="list-style-type: none"> • The accuracy of monopoly money 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> • The accuracy of the material of the monopoly money with the student character 	3	4	75	Valid enough	Not revised
		<ul style="list-style-type: none"> • The accuracy of the color of the monopoly money 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> • The accuracy of the size of monopoly money with the students character 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> • The accuracy of the picture of monopoly money 	4	4	100	Very valid	Not revised
		<ul style="list-style-type: none"> • The accuracy of alphabet of 	4	4	100	Very	Not revised

		monopoly money				valid	
		f. Point card					
		• The accuracy of the size of point card	4	4	100	Very valid	Not revised
		• The accuracy of the shape of point card	4	4	100	Very valid	Not revised
		g. Role of playing					
		• The accuracy of the content of playing role	4	4	100	Very valid	Not revised
		• The accuracy of picture on the role game					
		• The accuracy of color on the role of playing	4	4	100	Very valid	Not revised
		• The accuracy of language the role of the game	3	4	75	Valid enough	Not revised
		h. The interesting packaging the media used	4	4	100	Very valid	Not revised
		i. Tolerance/durability of media for the long time	4	4	100	Very valid	Not revised
			4	4	100	Very valid	Not revised
			3	4	75	Valid enough	Not revised
3	Quality and the technic of the usage media	a. The accuracy of technic media	3	4	75	Valid enough	Not revised
		b. The usage for group	3	4	75	Valid	Not revised

	playing					enough	
	c. The usage to attract the students	4	4	100		Very valid	Not revised
	d. The accuracy of the needed time for the usage in the media	3	4	75		Valid enough	Not revised
4	Which interesting to use again in the following learning	3	4	75		Valid enough	Not revised
Total		172	188	91%		Very valid	Not revised

Explanation:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$\sum x$ =Score answer by Mr. Ahmad Abtokhi, M.Pd as validator

$\sum xi$ = Score of ideal answer

P =Percentage level of validity

Table4.6

Distribution Frequency Level of Validity by an Expert of Learning Media on Science Monopoly Game about Living Plants for 5th Grade Students

Level of validity	F	%
Valid	31	65,95
Valid enough	16	34,04

The chart above showed the result validation of data by an expert of learning media through the product development of science monopoly media about living plant is 65,95% stated valid, while 34,04% stated valid enough.

Level of validity	Question items
-------------------	----------------

Very valid	1a.1 and 1a.2 2a.4 2b.1, 2b.3, 2b.4, and 2b.5 2c.1, 2c.2, 2c.3, 2c.4, 2c.5, 2c.6, and 2c.7 2d.2, 2d.3, 2d.5, 2d.7 and 2d.8 2e.2, 2e.3, 2e.4, 2e.5, and 2e.6 2f.1, and 2f.2 2g.1, 2g.3, and 2g.4 2h.1 3c
Valid enough	1a.3 and 1a.4 2a.1, 2a.2 and 2a.3 2b.2 2d.1, 2d.4 and 2d.6 2e.1 2g.2, and 2g.5 2h.2 3a, 3b, and 3d

Here are the qualitative data which collected from the ideas, suggestions and comments from an expert of learning media by an open statement related to the science monopoly media are explained in the chart below:

Table4.7

Summary of Research Data on the Evaluation and Review of the Expert Learning Media

Component/position	Data Description	Suggestion/comment
Illustration	Illustration/picture on each slot	Illustration on each slot should be cleared
Users	The number of players in a group	As able as use by the more students

All of the review result, evaluation and discussion with an expert of learning media become the base for revise to complete the media design of science monopoly media before examine to the students as the user of the developing media.

3. Validation Result of Science Teacher at 5th Grade of MI Al Maarif 02 Singosari

Validation of instructional material to teachers teaching science held on 28 March 2014. Validation carried out to teachers teaching science MI Al Maarif 02 Singosari is Mr. Fathan Fahmi, S.Pd.I. The results of the assessment and response to the teacher teaching science instructional materials matter Photosynthesis is as follows:

Table 4.8
Result Evaluation from the Science Teacher Trough the Science Monopoly Game about Living Plants

Aspect of evaluation	Indicator of evaluation	X	X _i	P (%)	Level of validity	Information
1. Suitability of learning media	1. The clear topic formulation at the development of science monopoly game	4	4	100	Very valid	Not revise
	2. Suitability of the prepared material	4	4	100	Very valid	Not

	of the media with the SK & KD					revise
	3. Suitability of the learning purpose with the KD & indicator	4	4	100	Very valid	Not revise
2. The easiness usage of the media in learning process	1. The easiness of material in the science monopoly media through the students understanding	4	4	100	Very valid	Not revise
	2. The easiness of game technic	4	4	100	Very valid	Not revise
	3. The easiness of the language on the media	4	4	100	Very valid	Not revise
3. The accuracy of the learning media	1. The accuracy of organizing the media	4	4	100	Very valid	Not revise
	2. The accuracy of organizing the material in a question form written in the card	4	4	100	Very valid	Not revise
	3. The accuracy of the usage of picture and font	4	4	100	Very valid	Not revise
4. Motivation for students in learning	1. The usage of the media can motivated the students in following learning process	4	4	100	Very valid	Not revise
5. The clear pre-test and post test questions	1. The easiness question	4	4	100	Very valid	Not revise
	2. The clear language used	4	4	100	Very valid	Not revise

		48	48	100 %	Very valid	Not revise
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Explanation:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$\sum x$ =Score answer by Mr. Fathan Fahmi, S.Pd as validator

$\sum xi$ =Score of ideal answer

P =Percentage level of validity

With the criteria of each numbers are:

1. Number 4 with criteria very accurate/very valid
2. Number 3 with criteria accurate enough/valid enough
3. Number 2 with criteria less accurate/less valid
4. Number 1 with criteria not accurate/not valid

Table 4.9

Distribution Frequency Level of Validity by an Expert of Learning Media on Science Monopoly Game about Living Plants for 5th Grade Students

Level of validity	F	%
Very Valid	12	100
Valid enough	0	0

Table above showed data validation result from an expert of learning media through the science monopoly game about living plants is 100 % stated very valid and appropriate to use as the science learning media in 5th grade of Elementary School about plants. From that result we can conclude that there is no revision for this media.

4 Questionnaire Result of Student Response for Individual Evaluation

Validation data are gotten from the result of research through the media at 5th grade students of Elementary School done on 17th of October 2014 and 28th of March 2014. The product development was given for field evaluation of science learning using science monopoly game.

The product development was given for individual evaluation which represent by 6 students from 5th grade of MI Al Maarif 02 Singosari. The criteria of the respondents are two including correspondences on above side, middle side a two correspondences of under side. Continued with the small group evaluation which has been represent by 12 students also from 5th grade of MI Al Maarif 02 Singosari. The criteria of the respondents are 4 respondents including above side, 4 respondents of middle side and 4 respondent of under side. Field evaluation represented by the 5th A grade students of MI Al Maarif 02 Singosari as an experiment class with 26 students and 5th grade B students of MI Al Maarif 02 Singosari as the control group with 26 students. The explanation of quantitative data from the individual evaluation as follow:

Table 4. 10

Result of Individual Evaluation Trough the Science Monopoly Game about Photosynthesis

No	Statement	Respondent						Σx	Σx_i	P (%)	Criteria of validity	Information
		1	2	3	4	5	6					
1	The students feeling when they were playing the science	4	4	4	4	4	4	24	24	100	Very valid	Not revise

	monopoly game												
2	The interesting of science monopoly game in a learning process	4	4	4	3	4	4	23	24	96	Valid enough	Not revise	
3	the students understanding level to the material in the game	4	4	4	4	4	3	23	24	96	Valid enough	Not revise	
4	The easiness level of questions in the question cards	4	4	4	3	4	3	22	24	92	Valid enough	Not revise	
5	The student understanding level to the language used in the science monopoly game	4	4	4	4	4	4	24	24	100	Very valid	Not revise	
6	Shape or the size of the media	4	3	4	4	4	4	23	24	96	Valid enough	Not revise	
7	The colors used in science monopoly game	4	4	4	3	4	4	23	24	96	Valid enough	Not revise	
8	The interesting of the pictures in science monopoly game	4	4	4	4	4	4	24	24	100	Very valid	Not revise	
9	The easiness of the technic game	4	4	4	4	4	4	24	24	100	Very valid	Not revise	

10	The use of the media in the following learning	4	4	4	4	4	4	24	24	100	Very valid	Not revise
Total		40	39	40	37	40	38	234	240	97%	Very valid	Not revise

Explanation:

1. 5th grade student of MI Al Maarif 02 is Farah Syarafiah Zahra
2. 5th grade student of MI Al Maarif 02 is Laily Firdhausi Aulia Amien
3. 5th grade student of MI Al Maarif 02 is M. Fauzul Adzim
4. 5th grade student of MI Al Maarif 02 is M. Nizar
5. 5th grade student of MI Al Maarif 02 is M. Zen Zain Afandi
6. 5th grade student of MI Al Maarif 02 is Nuzula Salsabila

Formula:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$\sum x$ = the total number of score answer evaluator (the real score)

$\sum xi$ = the total ideal number (the expectation score)

P = percentage level of validity

Table 4.11

Distribution Frequency Level of Validity from the individual evaluation on Science Monopoly Game about Photosynthesis for 5th Grade Students

Level of validity	F	%
Very valid	5	50
Valid enough	5	50

Level of validity	Question items
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Very valid	1, 5, 8, 9 and 10
Valid enough	2, 3, 4, 6 and 7

The chart above showed the result of individual evaluation through the development of science monopoly game for 5th grade students of MI Al Maarif 02 Singosari about photosynthesis is 50% stated very valid, and 50% stated very valid.

Here are the qualitative data which collected from the ideas, suggestions and comments from individual evaluation by an open statement related to the science monopoly media are explained in the chart below:

1. Questions in the question card are too difficult
2. Make the stage of the game clearer (how to end the game)

7. Questionnaire Result of Student Response for Small Group Evaluation

The explanation of quantitative data from the result of small group evaluation as follow:

Table 4.12
Result Evaluation from the Small Group Evaluation Trough the Science Monopoly Game about Living Plants

No	questions	Respondent												ΣX	ΣXI	P (%)	Criteria of validity	Informations	
		1	2	3	4	5	6	7	8	9	10	11	12						
1	The students feeling when they were playing the science monopoly game	4	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Very valid	Not revise
2	The interesting of science monopoly game in a learning process	4	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Very valid	Very valid
3	the students understanding level to the material in the game	4	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Very valid	Not revise
4	The easiness level of	4	3	4	3	4	4	4	3	4	4	3	3	43	48	89	Valid	Not	

	questions in the question cards																enough	revise
5	The student understanding level to the language used in the science monopoly game	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Very Valid	Not revise
6	Shape or the size of the media	3	4	4	4	4	4	4	4	4	4	3	4	46	48	96	Valid enough	Not revise
7	The colors used in science monopoly game	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Very valid	Not revise
8	The interesting of the pictures in science monopoly game	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Very valid	Not revise
9	The easiness of the technic game	4	4	4	4	4	4	4	4	4	4	4	3	47	48	98	Valid enough	Not revise
10	The use of the media in the following learning	4	4	4	4	4	4	4	4	4	4	4	4	48	48	100	Valid enough	Not revise
Total		39	39	40	39	40	40	40	39	40	40	38	38	472	480	98%	Valid	Not

Formula:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$\sum x$ = total score of the answer evaluator (real score)

$\sum xi$ = total highest score (expectation score)

P = percentage of validity

Table 4.12
Distribution Frequency Level of Validity from the small group evaluation on Science Monopoly Game about Photosynthesis for 5th Grade Students

Level of validity	F	%
Very valid	6	60
Valid enough	4	40

The chart above showed the result of small group evaluation through the development of science monopoly game for 5th grade students of MI Al Maarif 02 Singosari about living plants is 60% stated very valid, and 40% stated valid enough.

Level of validity	Question items
Very valid	1, 2, 3, 5, 7 and 8
Valid enough	4, 6, 9 and 10

Here are the qualitative data which collected from the ideas, suggestions and comments from small group evaluation by an open statement related to the science monopoly media are explained in the chart below:

1. Question in the question cards are easier and completed with the key answer
2. The stage of game are easy to understand

8. Questionnaire Result of Student Response for Big Group Evaluation

The explanation of quantitative data from the result of big group evaluation (field evaluation) as follow:

Table 4.13
Result of Student Response from the Big Group Evaluation Trough the Science Monopoly Game About Photosynthesis

No	Question	Responden																								ΣX	ΣXi	P (%)	Criteria of Validity					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24									
1	The students feeling when they were playing the science monopoly game	4	4	3	4	4	3	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	3	4	99	104	95	Sangat Valid	
2	The interesting of science monopoly game in a learning process	4	4	4	4	4	3	4	4	4	4	4	4	3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3	100	104	96	Sangat Valid
3	the students understanding level to the	3	4	3	3	4	4	4	4	4	4	4	4	3	3	4	4	3	3	3	4	4	4	4	4	4	4	4	4	3	94	104	90	Sangat Valid

10. 5th grade student of MI Al Maarif 02 is Luqman Hakim
11. 5th grade student of MI Al Maarif 02 is M. Arsyad Mu'afi
12. 5th grade student of MI Al Maarif 02 is M. Iqbal Ardyansa
13. 5th grade student of MI Al Maarif 02 is M. Okky Mabruri
14. 5th grade student of MI Al Maarif 02 is M. Syafii Aghni
15. 5th grade student of MI Al Maarif 02 is M. Nabil Fikri
16. 5th grade student of MI Al Maarif 02 is Muthmainnah
17. 5th grade student of MI Al Maarif 02 is Nabila Aisyah
18. 5th grade student of MI Al Maarif 02 is Nabila Artiana
19. 5th grade student of MI Al Maarif 02 is Nessa Akbar F.
20. 5th grade student of MI Al Maarif 02 is Najma Qim'atul F.
21. 5th grade student of MI Al Maarif 02 is Sofia Nur Isma
22. 5th grade student of MI Al Maarif 02 is Siti Alwiyah
23. 5th grade student of MI Al Maarif 02 is Dinar Mufidatus
24. 5th grade student of MI Al Maarif 02 is Achmad Mudzakkir
25. 5th grade student of MI Al Maarif 02 is Roudhotul Jannah
26. 5th grade student of MI Al Maarif 02 is M. Dita Maulana

Table 4.14
Distribution Frequency Level of Validity from the Big Group Evaluation on Science Monopoly Game about Photosynthesis for 5th Grade Students

Tingkat Validitas	F	%
Sangat Valid	8	80
Valid	2	20

The chart above showed the result of big group evaluation through the development of science monopoly game for 5th grade students of MI Al Maarif 02 Singosari about photosynthesis is 80% stated very valid, and 20% stated valid.

Level of validity	Question items
Very valid	1, 2, 3, 5, 6, 7, 8, 9, and 10
Valid	4

Here are the qualitative data which collected from the ideas, suggestions and comments from small group evaluation by an open statement related to the science monopoly media are explained in the chart below:

- a. Question in the question cards are easier and completed with the key answer
- b. The stage of game are easy to understand.

C. The Evaluation Result on the Usage of Science Monopoly Game

The result of the whole of the stages, gotten the data score of pre-test and post-test score in each class, those are control class and experiment class as follow:

Table 4.15
The Result Of The Experiment Class Of Student's Test In Class VA

NO	NAME	PRE-TEST SCORE	POST-TEST SCORE
1	Aghni Yadna Aulia	40	90

2	Anggun Okta Viani	80	100
3	Alma Mursyidah	80	90
4	Alfiah Wardani Mihdad	90	100
5	Arrisa Zulfatul L.	100	100
6	Fahmi Alfauzi	50	80
7	Fairuz L.L.M	90	98
8	Hamid Awaludin	70	85
9	Imam Tajudin Asubqi	50	90
10	Luqman Hakim	40	100
11	M. Arsyad Mu'afi	70	77
12	M. Dita Maulana	70	90
13	M. Iqbal Ardyansa	70	100
14	M. Okky Mabruhi	30	70
15	M. Syafii Aghni	70	80
16	M. Nabil Fikri	50	70
17	Muthmainnah	80	100
18	Nabila Aisyah	60	90
19	Nabila Artiana	80	96
20	Nessa Akbar F.	70	100
21	Najma Qim'atul F	90	98
22	Sofia Nur Isma	80	98
23	Siti Alwiyah	70	90
24	Dinar Mufidatus S.	40	100
25	Achmad Mudzakkir	60	80
26	Roudhotul Jannah	50	70
Total		1730	2342
Average		66, 53	90,076

Table 4.15
The Result of the Controlled class of student's test in class VB

NO	NAME	PRE-TEST SCORE	POST-TEST SCORE
1	Ahmad Daffa	70	80
2	Ahmad Firdaus	60	88
3	Ali Masykur	70	70
4	Akhmad Oktovani Rozikin	70	60
5	Arinal Khaqqul A	60	64
6	Aulia Ahmad Alfian	80	84
7	Farah Syarafiah Zahra	70	74
8	Farah Wildiani Putri	60	76
9	M. Arwani	70	80
10	M. Asadullah	60	78
11	M. Andis Jouhary Fuad	70	79
12	M. Farauq Zulfikar A. Y	60	60

13	M. Fauzul Adhim	30	60
14	M. Khasbi. A.F	80	77
15	M. Syamsul Maarif	30	38
16	M. Trisno Hadi	50	70
17	M. Zidni Rosyid	70	72
18	M. Zulfikar Ali Yafi	60	60
19	Miftahul Huda	70	70
20	Nandra Agung W.	50	54
21	Nuzula Salsabila	90	98
22	Qurrotul Ayun	70	64
23	Salwa Azzahra Rahmadhantya	44	50
24	Syahrul Fauzi	70	74
25	Putri Nabila	50	64
26	M. Alfian Fikri Surya Maulana	60	64
Total		1624	1808
Average		62,46154	69,54

Based on the data in the chart above showed that the average (*mean*) from the control group achieved 69.54 and average (*mean*) from experiment group achieved 90.076. This thing showed that there are differences between control group and experiment group. Seen from the averages of the experiment and control group that is $90.076 > 69.54$, so the study results of the students at the experiment group increase after using the science monopoly game.

CHAPTER V

DISCUSSION

This chapter will discuss about (1) Analysis development of science monopoly game, (2) Analysis validation from an expert and , (3) Analysis result of students response, (4) Analysis evaluation of experiment product.

A. Analysis Development of Science Monopoly Game

Development of this science monopoly game for 5th grade students about living plants based on the fact that the media has criteria as science sufficient learning media was not available yet, especially which has learning specification with game basis. So that the result of this development meant to fulfil the available learning media which can increase the effectiveness, efficiency and interesting of science learning in Elementary School in reaching the result of education which decided in the curriculum.

Procedures of this development media taken on through some stages, those are:

1) Analysis needs; 2) Analysis learning; 3) Analysis student and content; 4) General and specific purpose; 5) Develop the instrument; 6) Develop the learning strategy; 7) Develop and choose the learning materials; 8) Plan and do the formative evaluation; 9) Doing revise; 10) Summative evaluation.

In this product development of science learning media has done completing gradually through the *review*, evaluation and experiment by an expert of science, an expert of learning media, science teachers and 5th grade students of MI Al Maarif 02 Singosari as the target user of developing science monopoly

game. Disclosed aspect to do some revises including the completeness and the appropriateness of the component, the usage and clear materials, suitability with the purpose of learning, interesting in the learning process, physical interest, game technic and the quality of the media in the learning process. The review and experiment result become the element of the completeness of product development to be evaluate individually, small and big group (field).

The development result of science monopoly game is a set of a science monopoly game which consist of pawns, dice, monopoly board, quiz time cards, get it cards, question cards, information cards, material and a guide books packaged in a box an put in a bag.

A game media is one of the *active learning* models which can stimulate student activeness and collaboration especially for Elementary Students. Using learning model is Constructivisme because in the process of learning used cooperative learning. The student in the class divided to some group, in each group have six student.

This learning model's characters are competitive and make the students exited to get their achievement and certain learning result. A game should be interesting and give new learning experiences to the students.¹

According to Piaget, consider a game as a media to increase the development of students cognitive. He said that children cognitive development limit the way

¹Benny A. Pribadi, *Model Desain Sistem Pembelajaran*, (Jakarta: Dian rakyat, 2010), page. 43

they play. A game may be makes them to practice the competences an their skills which needs enjoy and pleasurable.²

Piaget sure that the cognitivestructures need to be train, and a game give a perfect setting for this exercises. Play and game become an important thing for children because, by playing they will have more experiences and knowledge. Beside that by helping to increase the power of thinking and their personality, playing also help their physical development by soft and hard moving. Beside the importance function for their personality development, playing also has social function, emotional and moral, they will feel the various kinds of emotion, such as happy, sad, proud, disappoint, angry, and etc. according to Hurlock playing can influence the children development, such as:³

- 1) Physical development
- 2) Motivation of communication
- 3) Distributing the hidden emotional energies
- 4) Distributing for their needs and wish
- 5) Source of learning
- 6) Development of perception
- 7) Study to being sociable
- 8) Moral standard
- 9) Learn and play based on the gender
- 10) Development of desired personality

²Elizabeth Hurlock, *Psikologi Perkembangan Suatu Pendekatan Sepanjang rentang Kehidupan*, (Jakarta: Erlangga, 2004), page. 330

³Elizabeth Hurlock, *op.cit.*, page. 349

As the education media, a game has many advantages as follow:⁴

1. Playing is some interesting thing to do.
2. Playing allowed the existence active participation from students to study.
3. Playing can directly give the implication.
4. Playing allowed the applying concepts or roles in a situation and actual role in the society.
5. Game is flexible.
6. Game can easily make and duplicate.
7. Help student who has difficulties in learning using traditional method.
8. Game can increase the student activeness in giving opinion or communication each other, this is allowed to help student who is silent person and shy person indirectly will make them more confidence.

The stages of game, as follow:

1. Stage of preparation
 - a. Formulate the purpose of achievement
 - b. Teacher explained the function of game that will do
 - c. Decide the kind of playing activity
 - d. Determine the room and place for play
 - e. Preparing the elements or media used for play.
2. Stage of accomplishing
 - a. Opening stage; in this stage teacher will give the direction to the students about what they have to do and how they have to do.

⁴Arif Sadiman, *op.cit.*, page.78

- b. Stage of accomplishing; in this stage students have to play the available game which has been determined following the rules that have been determined.
- c. Stage of closing; in this stage teacher will give reward to the students who has played the game well. Besides giving the reward teacher have to give direction to the student who have not good enough in playing game and ask them to play again till they can do it well.⁵

In this research, monopoly game develop and use as the learning visual media which has a function of easier to deliver the learning process, confirming the understanding of learned material, and increase the motivation and growing the interest of students so that they can reach the high score in the science lesson. Monopoly game in this research will be modify in the form of education game in order to relevance with the material which is learned and grow the student motivation to learn even though playing game.

Product development of monopoly as a learning media has a strength and weaknesses. The strength of this media which develop is:

- 1) Science monopoly media present the *active learning* method which forces the student to be more active in a learning process and learn to make a group in discussing the learning material by identify various kind of science knowledge through the monopoly media.

⁵<http://id.shvoong.com/social-sciences/education/kelebihan-dan-kekurangan-metode-bermain/diakkses-pukul-09.17/10/04/2014>

- 2) Science monopoly media can increase the psychomotor skill and effectiveness of students.
- 3) Science monopoly media can increase the collaboration and socialization skill with their friends so that it can help the students who has quite person in order to be more brave to state their opinion.
- 4) Learning science will be more interesting because the learning organized in a game so that can decrease the bored of learning.
- 5) Students are more motivated to learn science especially for student who have low skill in science lesson, so that it can increase the result of study indirectly.
- 6) Train the student discipline, because there are many rules in this game which have to be obeyed.

These are the weakness from the science monopoly game which is developed for 5th grade students of MI Al Maaarif 02 as follow:

- 1) Restricted only for 5th grade students of Elementary School.
- 2) Restricted only one topic of material that is photosynthesis.
- 3) The game can make the students ignore the time and decrease their focus in learning.
- 4) Need more times.
- 5) Only can use in group not for individual.

B. Analysis Validation from the Expert

Development of science monopoly game about living plant already validated by the expert of material, the expert of learning media, the science teacher of 5th grade students and used in an experiment (individual, small and big group).

The validation result from some subjects of validator are converted at the scale percentages based on the stipulation level of validity and the basic of taking decision to revise the science monopoly media used appropriateness qualification criteria and evaluation as follow:

Table5.1

Appropriateness Qualification of Evaluating Science Monopoly Media Based on the Percentage

Percentage (%)	Appropriateness Criteria
90 – 100	Very appropriate, no need any revise
75 – 89	Appropriate, no need any revise
65 – 74	Appropriate enough, need any revise
55 – 64	Less Appropriate, need any revise
0 – 54	Not Appropriate, need total revision

1. Data Analysis Validation by the Expert

Based on the scale conversion which decided in the questionnaire of product evaluation, as follow:

- a. Number 4 with criteria very accurate/less valid
- b. Number 3 with criteria accurate enough/valid enough
- c. Number 2 with criteria less accurate/less valid
- d. Number 1 with criteria very less accurate/less valid

The explanation of data result by the expert of science through the science monopoly media for 5th grade students of Elementary School based on the following chart:

- a. The suitability of learning purpose with the basic competence and indicator are very appropriate.
- b. The systematical accurateness of prepared material with the very valid of learning procedure.
- c. The clear prepared materials which very valid.
- d. The easiness level of prepared material through the science monopoly game is accurate enough or valid enough.
- e. The accuracy of packaging material in the form of question which available on the cards is accurate enough.
- f. The clear language in the material prepared accurately or very valid.
- g. The deepness served material is valid enough.
- h. The accuracy of prepared material is valid enough.
- i. The suitability of evaluation questions with the material is very valid.
- j. The number of questions given is very accurate.
- k. The easiness level of evaluation question with the students understanding is very valid.
- l. The clear language and terms used in the questions is very valid.
- m. Effectiveness of delivering materials using the science monopoly media is very accurate.
- n. The accuracy of the usage of science monopoly media is very valid.
- o. The interesting activity of the learning using the science monopoly game is very valid.

- p. The easiness level of technical playing using students understanding is very valid.
- q. The effectiveness of learning using science monopoly media is very valid.
- r. The possibility of the media usage in the following learning is very valid.

From the questionnaire, the response from the lecturer of Islamic Primary School Teacher Education Department as an expert of material, are able to count the percentage of the validation level and the appropriateness of science monopoly media as follow:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = 68 \times \frac{100\%}{72}$$

$$= 94\%$$

Based on the calculation above, got the percentage result 94%. Based on the scale conversion chart, the level of percentage reach up to 94% at the qualification is very valid so that the science monopoly media do not need to be revised. This is showed that the science monopoly media about living plant have already good and appropriate to use according to the expert of material.

2. Data Analysis Validation by the Expert of Learning Media

Based on the scale conversion which decided in the questionnaire of product evaluation, as follow;

- a. Number 4 with criteria very accurate/less valid
- b. Number 3 with criteria accurate enough/valid enough

- c. Number 2 with criteria less accurate /less valid
- d. Number 1 with criteria very less accurate /less valid

The explanation of data result by the expert of learning media through the science monopoly media for 5th grade students of Elementary School based on the following chart:

1. The appropriateness of science monopoly media with the material is very valid.
2. The suitability of science monopoly media with the purpose of learning is very valid.
3. The suitability of science monopoly media with SK and KD is valid enough.
4. The suitability of science monopoly media with the time allocation is very valid.
5. The accuracy of choosing the square shape of monopoly with the characteristic of students is valid enough.
6. The accuracy of choosing the element of monopoly is valid enough.
7. The accuracy of the box color with the students characteristic is very valid.
8. The accuracy of choosing the shape of cards with the student character is very valid.
9. The accuracy of choosing the element of the card with the student character is valid enough.
10. The accuracy of choosing the color with the student character is very valid
11. The accuracy of choosing the size of cards with the student character is very valid.

12. The accuracy of choosing the size of fonts with the student character is very valid.
13. The accuracy of choosing the shape of pawns with the student character is very valid.
14. The accuracy of choosing the element of pawn is very valid.
15. The accuracy of choosing the size of pawn is very valid.
16. The accuracy of choosing the size of dice is very valid.
17. The accuracy of choosing the element of dice is very valid.
18. The accuracy of choosing the color of dice is very valid.
19. Design cover suitable with the content of material is very valid.
20. The font used in the media is very valid.
21. The font size used in the media is very valid
22. The pictures suitable with the content of material is valid enough
23. The choosing of picture used in the book that attracted the students is very valid
24. The lay out on the book is valid enough.
25. The accuracy of the picture size is very valid.
26. The accuracy of the books color is very valid.
27. The accuracy of choosing the size of money is valid enough.
28. The accuracy of the element of money valid enough.
29. The accuracy of choosing the color of money is very valid.
30. The accuracy of choosing the size of money with the students character is valid enough

31. The accuracy of choosing the picture of money is very valid.
32. The accuracy of choosing the font of money is valid enough.
33. The accuracy of the rule of playing the game is very valid.
34. The accuracy of the pictures rule of playing the game is very valid.
35. The accuracy of the color of pictures rule in the game is very valid.
36. The accuracy of the language used in rule of playing the game is very valid.
37. The interesting package of the media is very valid.
38. The durability of the media for a long time is valid enough.
39. The accuracy of the technic playing is very valid.
40. The usage in group learning is valid enough.
41. The usage in attract the student is very valid.
42. The accuracy of time needs in the usage of the game is valid enough.
43. The interesting to use in the following learning is valid enough.

From the questionnaire that response by the physic lecturer of science and technology faculty at State Islamic University of Maulana Malik Ibrahim Malang as the expert of learning media, calculated the percentage validity level of science monopoly media as follow:

$$P = \frac{\sum x}{\sum x_i} \times 100\%$$

$$P = 172 \times \frac{100\%}{188}$$

$$= 91\%$$

Based on the result above, got the result of the percentage up to 91%. Based on the scale conversion chart, reached the percentage up to 91% at the very valid qualification and appropriate so that the science monopoly media do not need to revise and can be use according to the expert of learning media.

3. Data Analysis Validation by 5th Grade Science Teacher

Based on the scale conversion which decided in the questionnaire of product evaluation, as follow;

- a. Number 4 with criteria very accurate/less valid
- b. Number 3 with criteria accurate enough/valid enough
- c. Number 2 with criteria less accurate /less valid
- d. Number 1 with criteria very less accurate /less valid

The explanation of data result by the expert of learning media through the science monopoly media for 5th grade students of Elementary School based on the following chart:

- a. The clear topic formulation on the development media about the process of photosynthesis is 100%. Showed that the media has already suitable with the determined topic formulation.
- b. The suitability of material prepared on the media with SK and KD showed 100% result. This is proved that the media has already suitable with SK and KD and appropriate to be the science media in the learning process about photosynthesis.
- c. The suitability of the learning purpose with the KD and indicator is 100%. It proved that the media has already suitable with the learning purpose.

- d. The easiness of the material in the science monopoly media through the students understanding is 100%. Showed that the material in the media is easy to understand.
- e. The easiness technic of the game got the score up to 100%. It showed that the science monopoly is easy to use by the students in Elementary level.
- f. Then, the easiness language used in the media scored 100%. Showed that the media used the easy language to understand by the students.
- g. The accuracy of the packaging media scored 100%. The packaging of the media is suitable with the student character.
- h. The accuracy of packaging material in the form of question which available in the card is 100%. The packaging material which used in the science monopoly media has already suitable with the character of the students.
- i. The accuracy of picture used and the font type scored 100%. It showed that the picture and the font already suitable with students character.
- j. The media usage can motivated the students in following the learning scored 100%, students can be motivated in learning science about photosynthesis.
- k. The easiness question scored 100% easy and suitable with the material, Skand Kd.
- l. The clear language used scored 100% clear and easy to understand base on the student character.

From the response of the questionnaire which filled a science teacher at 5th grade of MI Al Maarif Singosarias an expert of science teacher, can be calculate the percentages level validity of the media as follow:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = 48 \times \frac{100\%}{48}$$

48

= 100%

Based on the result above, got the result of percentage up to 100%. Based on the chart of scale conversion, scale level can reach 100% at the very valid qualification and appropriate so that the science monopoly media do not need to revise and can be use according to the science teacher.

C. Data Analysis Validation by Field Evaluation

The chart showed the result validation of science monopoly on the individual evaluation through the development of learning media at 5th grade Elementary School of MI Al Maarif 02 Singosari about photosynthesis scored well with percentage 97% from the determined criteria.

The result of individual evaluation on each components as analyzed quantitatively to individual evaluation can be interpret as follow:

- a. The students feeling when they were using the science monopoly media got the percentage score up to 100%. It showed that the media can makes the student happy in learning science.
- b. The interesting of science monopoly media in the learning process got 96%. It showed that the science monopoly media makes the student interest to learn science especially about living plants.

- c. The level of students understanding through the language used in that media got 96%. It showed that the science monopoly game helped the student to understand about living plants in science lesson.
- d. The easiness level of question in the questions card got 92%. It showed that the question in the media is easy enough to understand and do by the students.
- e. The understanding level through the language used in the media got 100%. It showed that the language used on the media is very easy to make the student understand.
- f. The shape or the size of the media science monopoly game got 96%. It showed the shape and the size used in the media is suitable with the student character.
- g. Colors used in the media science monopoly got 96%. It showed that the color used in the media is suitable for the student character.
- h. The interesting pictures in the media got 100%. It showed that the picture prepared in the media already suitable with the students character.
- i. The easiness technic of science game got 100%. It showed that the technic used in the monopoly game can makes the students easy to learn science.
- j. Re-usage of the media in the following lesson got 100%. It showed the science monopoly game can be reuse about the living plant in the following years.

Based on the questionnaire chart that filled by the 6 subjects evaluation they are the 5th grade students of MI Al Maarif 02 Singosari, are countable for the whole percentage level of validity as follow:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = 234 \times \frac{100\%}{240}$$
$$= 97\%$$

Based on the calculation above, the result that has gotten is 97%. Based on the chart of scale conversion, the percentage of achievement level is 97% on the very valid qualification so that the science monopoly game for 5th grade student of MI Al Maarif 02 Singosari are very good and appropriate to use in a learning process.

The result of small group evaluation through the development media of science monopoly game for 5th grade student of MI Al Maarif 02 singosari scored very good with percentage 98% from the determined criteria. The result of small group evaluation on each component as analyzed quantitatively to mall group evaluation can be interpret as follow:

- a. Students feeling when using the science monopoly media sored 100%. It showed that the media can make the student feel happy in science learning process.
- b. The interesting science media monopoly in a learning process with percentage 100%. It showed that the media can attract the student to learn science especially science about plant.
- c. The level of students understanding through the material in the science monopoly media got 100%. It showed that the science monopoly media can help the students in understanding living plant.

- d. The easiness level of question in the questions card got 89%. It showed that the question in the media is easy enough to understand and do by the students.
- e. The understanding level through the language used in the media got 100%. It showed that the language used on the media is very easy to make the student understand.
- f. The shape or the size of the media science monopoly game got 96%. It showed the shape and the size used in the media is suitable with the student character.
- g. Colors used in the media science monopoly got 100%. It showed that the color used in the media is suitable for the student character.
- h. The interesting pictures in the media got 100%. It showed that the picture prepared in the media already suitable with the students character.
- i. The easiness technic of science game got 98%. It showed that the technic used in the monopoly game can makes the students easy to learn science.
- j. Re-usage of the media in the following lesson got 100%. It showed the science monopoly game can be reuse about the living plant in the following years.

Based on the questionnaire chart that filled by the 12 subjects evaluation they are the 5th grade students of MI Al Maarif 02 Singosari, are countable for the whole percentage level of validity as follow:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = 472 \times \frac{100\%}{480}$$

$$= 98\%$$

Based on the calculation above, the result that has gotten is 98%. Based on the chart of scale conversion, the percentage of achievement level is 98% on the very valid qualification so that the science monopoly game for 5th grade student of MI Al Maarif 02 Singosari are very good and appropriate to use in a learning process.

The result of big group evaluation through the development media of science monopoly game for 5th grade student of MI Al Maarif 02 singosari scored very good with percentage 93% from the determined criteria. The result of small group evaluation on each component as analyzed quantitatively to mall group evaluation can be interpret as follow:

- a. Students feeling when using the science monopoly media sored99%. It showed that the media can make the student feel happy in science learning process.
- b. The interesting science media monopoly in a learning process with percentage 96%. It showed that the media can attract the student to learn science especially science about plant.
- c. The level of students understanding through the material in the science monopoly media got 90%. It showed that the science monopoly media can help the students in understanding living plant.
- d. The easiness level of question in the questions card got86%. It showed that the question in the media is easy enough to understand and do by the students.
- e. The understanding level through the language used in the media got89%. It showed that the language used on the media is very easy to make the student understand.

- f. The shape or the size of the media science monopoly game got 96%. It showed the shape and the size used in the media is suitable with the student character.
- g. Colors used in the media science monopoly got 97%. It showed that the color used in the media is suitable for the student character.
- h. The interesting pictures in the media got 95%. It showed that the picture prepared in the media already suitable with the students character.
- i. The easiness technic of science game got 92%. It showed that the technic used in the monopoly game can makes the students easy to learn science.
- j. Re-usage of the media in the following lesson got 93%. It showed the science monopoly game can be reuse about the living plant in the following years.

Based on the questionnaire chart that filled by the 26 subjects evaluation they are the 5th grade students of MI Al Maarif 02 Singosari, are countable for the whole percentage level of validity as follow:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

$$P = 968 \times \frac{100\%}{1040}$$

$$= 93\%$$

Based on the calculation above, the result that has gotten is 93%. Based on the chart of scale conversion, the percentage of achievement level is 93% on the very valid qualification so that the science monopoly game for 5th grade student of MI Al Maarif 02 Singosari are very good and appropriate to use in a learning process.

D. Analysis of Different Test (*Uji Beda*) in Using Science Monopoly Media About Photosynthesis

After gotten the control and experiment group's data, the next stage is comparing the result from both of two groups about the differences or the same through the T test are explained in the following paragraph. Calculation using the formula of T test pairing with the level of believing around 95%. The stages are

Stage 1. Making Hypothesis

Ha : There are some significant difference on the learning science at 5th grade students that used science monopoly media with the learning science in the other 5th grade student without using science monopoly media at MI Al Maarif 02 Singosari.

Ho : There is no significant difference from the result of learning science to 5th grade students who are using science monopoly in their science class with the other 5th grade students who did not using science monopoly in their science class, at MI Al Maarif 02 Singosari.

Stage 2. Making Ha and Ho in a statistic form

$$Ha : \mu_a \neq \mu_b$$

$$Ho : \mu_a = \mu_b$$

Stage 3. Find the Rerata (\bar{X}), Standard deviation (s), Varians (s^2), and correlation (r)

$$\text{Average} \quad : \bar{x}_1 = 90,08 \quad \bar{x}_2 = 69,54$$

$$\text{Standard deviation} \quad : s_1 = 10,43 \quad s_2 = 12,63$$

$$\text{Varians} \quad : s_1^2 = 108,43 \quad s_2^2 = 159,54$$

Correlation : 0,055

Because $s_1^2 \neq s_2^2$ so that $dk = n_1 - 1$ or $n_2 - 1$, $dk = 26 - 1 = 25$

Stage 4. Find t and Count with the Formula

$$\begin{aligned}
 t &= \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2} - 2.r \left(\frac{s_1}{\sqrt{n_1}} \right) \left(\frac{s_2}{\sqrt{n_2}} \right)}} \\
 &= \frac{90,076 - 69,538}{\sqrt{\frac{108,43}{26} + \frac{159,54}{26} - 2(0,055) \left(\frac{10,43}{\sqrt{26}} \right) \left(\frac{12,63}{\sqrt{26}} \right)}} \\
 &= \frac{20,54}{\sqrt{\frac{108,43}{26} + \frac{159,54}{26} - 0,11 \left(\frac{10,43}{5,099} \right) \left(\frac{12,63}{5,099} \right)}} \\
 &= \frac{20,54}{\sqrt{\frac{108,43}{26} + \frac{159,54}{26} - 0,11 (2,04)(2,48)}} \\
 &= \frac{20,54}{\sqrt{\frac{108,43}{26} + \frac{159,54}{26} - 0,56}} \\
 &= \frac{20,54}{\sqrt{\frac{267,97}{26} - 0,56}} \\
 &= \frac{20,54}{\sqrt{10,30 - 0,56}} \\
 &= \frac{20,54}{\sqrt{9,74}} \\
 &= \frac{20,54}{3,12} \\
 &= \mathbf{6,583}
 \end{aligned}$$

Stage 5. Deciding t_{table}

- Significant degree ($\alpha = 0,05$)
- $dk = n_1 - 1 = 26 - 1 = 25$

- So that got the data $t_{table} = 2,060$ (interpolation)

Stage 6. Criteria of deciding conclusion

- If : $t_{count} \leq t_{table}$, means H_0 receive and H_a reject
- If : $t_{count} \geq t_{table}$, means H_0 reject and H_a receive

Stage 7. Comparing t_{table} with t_{count}

Because the value of $t_{count} 6.583$ and the value of $t_{table} 2.060$, means that H_0 reject and H_a receive, $t_{count} \geq t_{table} 6.583 \geq 2.060$.

Stage 8. Conclusion

H_a : There are significant difference in increasing of learning result of 5th grade students on science material which used the media with the other 5th grade students without using science monopoly game at MI Al Maarif 02 Singosari. (ACCEPTED).

H_0 : There is no significant difference from the result of learning science to 5th grade students who are using science monopoly in their science class with the other 5th grade students who did not using science monopoly in their science class, at MI Al Maarif 02 Singosari. (REJECTED).

Based on the T test which has done, showed the significant difference in the result of 5th grade students who are learning science about photosynthesis to the control group and experiment group. The development of study result of the photosynthesis material cause of the manner of the science learning media to all of experiment through the 5th grade student. It showed that the learning media which

given influence to the study result development about photosynthesis for 5th grade students of MI Al Maarif 02 Singosari.



CHAPTER VI

CLOSING

This chapter contains two main idea, those are 1) The conclusion of development result, and 2) Suggestions including suggestion of applying product, suggestion of product distribution, and suggestion of development product.

A. Conclusion of Development Result

Based on the development process and the evaluation result through the monopoly as a science learning media 5th grade students of V MI Al Maarif 02 Singosari can be explained as follows:

1. The development of this media has been produced monopoly in the form of learning plant. It has been fulfilled the component as the best learning media. Result of its development can fill the availability or add the various science learning media for 5th grade students especially which is develop in the form of game to be a source inspiration for teacher and student in science learning process at MI Al Maarif 02 Singosari. A product which has been produced by the development of science learning media has some specifications as follows:
 - a. The delivered material is about plant at 5th grade of MI in the first semester.
 - b. The delivered material in monopoly media prepared attractively using a playing method.
 - c. Helping the students to understand science and make them interest with this lesson are the purposes of science monopoly media.
 - d. Science monopoly media can increase students to collaborate each other.

2. The result evaluation of monopoly as a science learning media at V MI has very high validity and interest level based on the result of responses and evaluation on the individual evaluation, small group evaluation and big group evaluation as the media user, this is very appropriate to be a part of science learning media especially about photosynthesis. Besides that validation result from an expert of learning media, an expert of learning and an expert of material showed very valid result and appropriate to be a part of science learning media especially about photosynthesis.
3. Science monopoly media can increase the result of students learning at 5th grade of MI Al Maarif 02 Singosari with experiment class result is bigger than control class $90.07 \geq 69.54$. Based on the result of SPSS 16 evaluation in evaluating T – Paired Sample Test showed significant value 0,000 which means smaller than determined significant by the examiner which showed 0.05.

B. Suggestions

Suggestions that offered include suggestion for the usage of the product needs, product dissemination, and the development needs afterwards. Those suggestions can be explained specifically as follows:

1. Suggestion for the usage of the product needs

To optimize the usage of science monopoli as the learning media at 5th grade of elementary school in terms of plant material suggested to:

- a. Use as an alternative of learning science in terms of plants.
 - b. Use by teachers guidance.
2. Suggestion for dissemination

For product dissemination to the considerable target therefore suggested those following things:

- a. It use in stages.
- b. It can be use and duplicate spaciouly if in fact, the usage are effective and efficient.
3. The development needs afterwards

For the development needs afterwards are suggested those following things. The media still has some weaknesses like what have been mentioned above (the result product development of learning). So that, suggested to the developing who are interested in decreasing these weaknesses.

- a. Monopoly as the science learning media Media in terms of plants for 5th grade of elementary school need to be develop for another lessons. It has to be develops so that it can train autonomy and collaborate of the students in learning science. Therefore must be develop in science lesson of 5th grade of elementary school in terms of plants containing everything which can support the science learning process. For that purpose, students have to use to be an autonomous learner in the science lesson class.
- b. Suggested to the teachers of elementary school especially science teachers to use this media in learning process to apply KTSP.
- c. Suggested to the teachers of elementary school especially science teachers to try to develop this media which appropriate with the school condition.

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<http://estiprastikaningsih.wordpress.com/2013/01/18/metode-permainan-dalam-pembelajaran-matematika/> diakses pukul 08.30/10/04/2014

<https://suaraguru.wordpress.com/2009/02/09/media-permainan-meningkatkan-motivasi-belajar-siswa/> diakses pukul 09.27 WIB/10/04/2014

<http://geografi-posting1.blogspot.com/2008/04/pengembangan-game-monopoli.html> diakses pukul 09.38 WIB/10/04/2014



INSTRUMEN VALIDASI MEDIA PERMAINAN MONOPOLI SAINS OLEH AHLI
PEMBELAJARAN GURU BIDANG STUDI IPA KELAS V

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan media permainan monopoli Ilmu Pengetahuan Alam (IPA) tentang materi cara tumbuhan membuat makanan, maka peneliti bermaksud mengadakan validasi media ajar yang telah diproduksi sebagai salah satu media pembelajaran. Untuk maksud diatas, peneliti mohon kesediaan Bapak/Ibu agar mengisi angket di bawah ini sebagai pelaksana pembelajaran IPA. Tujuan dari pengisian angket adalah mengetahui kesesuaian pemanfaatan media permainan monopoli sains berdasarkan disiplin ilmu IPA. Hasil dari pengukuran melalui angket akan digunakan untuk penyempurnaan media ajar agar dapat dimanfaatkan dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesediaan Bapak/Ibu sebagai ahli pembelajaran IPA.

Nama : Fathan Fahmi
NIP :
Instansi : MI Al-Maarif 02 Singosari
Pendidikan : PGMI UNISMA
Alamat : Jl. Kramat 03 Singosari

B. Petunjuk Pengisian Angket


1. Sebelum mengisi angket ini, mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari media ajar yang dikembangkan.
2. Berilah tanda centang () pada salah satu angka pada masing-masing kolom sesuai dengan penilaian Bapak/Ibu. Dengan kriteria masing-masing angka adalah:
 - a. Angka 4 dengan kriteria sangat tepat/sangat valid
 - b. Angka 3 dengan kriteria cukup tepat/cukup valid
 - c. Angka 2 dengan kriteria kurang tepat/kurang valid
 - d. Angka 1 dengan kriteria tidak tepat/tidak valid
3. Kecermatan dalam penilaian ini sangat diharapkan

C. Pertanyaan-pertanyaan angket

Aspek Penilaian	Indikator Penilaian	Pilihan Jawaban			
		1	2	3	4
1. Kesesuaian media pembelajaran	1. Kejelasan rumusan topik pada pengembangan media permainan monopoli sains				✓
	2. Kesesuaian materi yang disajikan pada media permainan monopoli dengan SK & KD				✓
	3. Kesesuaian tujuan pembelajaran dengan KD & indikator				✓
2. Kemudahan penggunaan media dalam proses pembelajaran	1. Kemudahan materi dalam media permainan monopoli sains terhadap pemahaman siswa				✓
	2. Kemudahan teknik permainan				✓
	3. Kemudahan bahasa yang digunakan pada media permainan monopoli sains				✓
3. Ketepatan media pembelajaran	1. Ketepatan pengemasan media permainan				✓
	2. Ketepatan pengemasan materi dalam bentuk soal yang terdapat				✓

	3. Ketepatan penggunaan gambar dan jenis huruf				✓
4. Motivasi siswa dalam pembelajaran	1. Penggunaan media permainan monopoli sains dapat memberikan motivasi siswa dalam mengikuti pembelajaran				✓
5. Kejelasan soal pre test dan post test	1. Kemudahan soal 2. Kejelasan bahasa yang digunakan				✓ ✓

Malang, 28 Maret 2014


Fathan Fahmi

.....
NIP.

Appendix VI**T-TEST**

Notes		
Output Created		14-Apr-2014 09:32:53
Comments		
Input	Active Dataset	DataSet0
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	26
Missing Value Handling	Definition of Missing	User defined missing values are treated as missing.
	Cases Used	Statistics for each analysis are based on the cases with no missing or out-of-range data for any variable in the analysis.
Syntax	T-TEST PAIRS=eksperimen WITH kontrol (PAIRED) /CRITERIA=CI(.9500) /MISSING=ANALYSIS.	
Resources	Processor Time	00:00:00.093
	Elapsed Time	00:00:00.328

[DataSet0]

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 eksperimen	90.08	26	10.434	2.046
kontrol	69.54	26	12.631	2.477

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 eksperimen & kontrol	26	.055	.789

Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 eksperimen - kontrol	20.538	15.933	3.125	14.103	26.974	6.573	25	.000

Appendix IX

CURRICULUM VITAE



Name : Zulia Rahmawati
ID Student : 10140075
Born : Malang, 1 September 1990
Address : Dsn. Gentengan No 33 Ds.
Purwoasri Kec.
Singosari Kab. Malang
Email : Zulia_risgo@yahoo.co.id
Phone : 085784240957
Father's Name : H. Zaenal Khanani
Mother's Name : Dewi Rukhilah

A. Jenjang Pendidikan:

a. Pendidikan Formal

1. TK. Muslimat 04 Singosari tahun 1997
2. MI Al Maarif 02 Singosari tahun 1997 s/d 2003
3. Mts N Turen tahun 2003 s/d 2006
4. MA Al Maarif Singosari tahun 2006 s/d 2009
5. SI Fakultas Ilmu Tarbiyah dan Keguruan/PGMI UIN Maulana Malik Ibrahim Malang tahun 2010/2014.

b. Pendidikan Non Formal

1. Pondok Pesantren Ittihadul Muslimin Turen tahun 2004 s/d 2006.
2. Ma'had Sunan Ampel Al Aly (MSAA) UIN Maulana Malik Ibrahim Malang 2010 s/d 2011

Appendix VIII

STUDENT ACTIVITY





PICTURE OF MEDIA MONOPOLY GAME





*Appendix V***VALIDATOR IDENTITY****1. Identity of Validator Monopoly Science Game from Experts of Science****Material**

Name : Agus Mukti Wibowo, M.Pd
 Official ID : 197807072008011021
 Profession : Dosen IPA
 Instance : FITK UIN Malang
 Education : S-2 Pendidikan Kimia UM
 Address : MSI E-29

2. Identity of Validator Monopoly Science Game from Experts of Learning**Media**

Name : Ahmad Abtokhi, M.Pd
 Official ID : 197610032003121004
 Profession : Dosen Fisika
 Instance : Fakultas SAINTEK/Jurusan Fisika
 Education : S2 Pendidikan Sains Fisika
 Address : Jl. Sumpil 2 Barat Kav. A5

3. Identity of Validator Monopoly Science Game from Experts of Science**Teacher of 5th Grade MI Al Maarif 02 Singosari**

Name : Fathan Fahmi, S.Pd
 Official ID : -
 Profession : Guru Mata Pelajaran IPA kelas V
 Instance : MI Al Maarif 02 Singosari
 Education : PGMI UNISMA
 Address : Jl. Kramat 03 Singosari

IDENTITY OF SUBJECT EXPERIMENT

A. Identitas Subjek Sasaran Uji Coba Perorangan

1. Siswa kelas VB MI Al Maarif 02 bernama Farah Syarafia Zahra
2. Siswa kelas VB MI Al Maarif 02 bernama Laily Firdhausi Aulia Amien
3. Siswa kelas VB MI Al Maarif 02 bernama M. Fauzul Adzim
4. Siswa kelas VB MI Al Maarif 02 bernama M. Nizar
5. Siswa kelas VB MI Al Maarif 02 bernama M. Zen Zain Afandi
6. Siswa kelas VB MI Al Maarif 02 bernama Nuzula Salsabila

B. identitas Subjek Sasaran Uji Kelompok Kecil

1. Siswa kelas VB MI Al Maarif 02 bernama Ahmad Al farisi
2. Siswa kelas VB MI Al Maarif 02 bernama Akhmad Oktiovani Rozikin
3. Siswa kelas VB MI Al Maarif 02 bernama Arinal Khaqqul Awwalin
4. Siswa kelas VB MI Al Maarif 02 bernama Aulia Ahmad Alfian
5. Siswa kelas VB MI Al Maarif 02 bernama Farah Wildiani Putri
6. Siswa kelas VB MI Al Maarif 02 bernama M. Andi Siohari Fuad
7. Siswa kelas VB MI Al Maarif 02 bernama M. Hafidz Lidinillah
8. Siswa kelas VB MI Al Maarif 02 bernama M. Harun Al Rasyid
9. Siswa kelas VB MI Al Maarif 02 bernama M. Zidni Rosyid
10. Siswa kelas VB MI Al Maarif 02 bernama Salwa Azzahra Rahmadhantya
11. Siswa kelas VB MI Al Maarif 02 bernama Syahrulfauzi
12. Siswa kelas VB MI Al Maarif 02 bernama Qurrotul Ayun

C. Identitas Subjek Sasaran Uji Kelompok Besar (uji lapangan)

1. Siswa kelas VA MI Al Maarif 02 bernama Aghni Yadna Aulia
2. Siswa kelas VA MI Al Maarif 02 bernama Anggun OktaViani
3. Siswa kelas VA MI Al Maarif 02 bernama Alma Mursyidah
4. Siswa kelas VA MI Al Maarif 02 bernama Alfiah Wardani Mihdad
5. Siswa kelas VA MI Al Maarif 02 bernama Arrisa Zulfatul L.
6. Siswa kelas VA MI Al Maarif 02 bernama Fahmi Alfauzi

7. Siswa kelas VA MI Al Maarif 02 bernama Fairuz L.L.M
8. Siswa kelas VA MI Al Maarif 02 bernama Hamid Awaludin
9. Siswa kelas VA MI Al Maarif 02 bernama Imam Tajudin Asubqi
10. Siswa kelas VA MI Al Maarif 02 bernama Luqman Hakim
11. Siswa kelas VA MI Al Maarif 02 bernama M. Arsyad Mu'afi
12. Siswa kelas VA MI Al Maarif 02 bernama M. Iqbal Ardyansa
13. Siswa kelas VA MI Al Maarif 02 bernama M. Okky Mabruri
14. Siswa kelas VA MI Al Maarif 02 bernama M. Syafii Aghni
15. Siswa kelas VA MI Al Maarif 02 bernama M. Nabil Fikri
16. Siswa kelas VA MI Al Maarif 02 bernama Muthmainnah
17. Siswa kelas VA MI Al Maarif 02 bernama Nabila Aisyah
18. Siswa kelas VA MI Al Maarif 02 bernama Nabila Artiana
19. Siswa kelas VA MI Al Maarif 02 bernama Nessa Akbar F.
20. Siswa kelas VA MI Al Maarif 02 bernama Najma Qim'atul F.
21. Siswa kelas VA MI Al Maarif 02 bernama Sofia Nur Isma
22. Siswa kelas VA MI Al Maarif 02 bernama Siti Alwiyah
23. Siswa kelas VA MI Al Maarif 02 bernama Dinar Mufidatus
24. Siswa kelas VA MI Al Maarif 02 bernama Achmad Mudzakkir
25. Siswa kelas VA MI Al Maarif 02 bernama Roudhotul Jannah
26. Siswa kelas VA MI Al Maarif 02 bernama M. Dita Maulana

Appendix VII

MADRASAH IBTIDAIYAH AL MAARIF 02 SINGOSARI

Madrasah Ibtidaiyah Almaarif 02 Singosari merupakan cikal bakal dari Yayasan Pendidikan Almaarif Singosari yang berdiri sejak tahun 1923. Sebagai Madrasah tertua di kalangan Singosari. Pada perkembangannya, Yayasan Pendidikan Almaarif Singosari juga membawahi Taman Kanak-kanak (TK) Islam Amaarif 01, Sekolah Dasar Islam (SDI) Almaarif 02, Madrasah Tsanawiyah (MTs) Almaarif 01, Sekolah Menengah Pertama Islam (SMPI) Almaarif 01, Madrasah Aliyah (MA) Almaarif, Sekolah Menengah Atas (SMA) Almaarif 01, Madrasah Aliyah (MA) Almaarif, Sekolah Menengah Atas (SMA) Almaarif, dan Sekolah Menengah Kejuruan Almaarif (SMK+Am).

Madrasah Ibtidaiyah Almaarif 02 Singosari letaknya sangat strategis, yaitu sebelah barat jalan raya Malang-Surabaya, tepatnya di sebelah masjid besar Hizbullah Singosari. Madrasah Ibtidaiyah Almaarif 02 Singosari terletak di kampus selatan Yayasan Pendidikan Almaarif Singosari dan merupakan satu lokasi dengan SDI Almaarif 02 Singosari, MTs Almaarif 01 Singosari, dan MA Almaarif Singosari.

Madrasah Ibtidaiyah Almaarif 02 Singosari merupakan lembaga pendidikan di bawah naungan lembaga pendidikan Maarif Jawa Timur berdasarkan Surat Keputusan Pimpinan pusat LP Maarif Nomor: PP/202/A-8/VII/1973 tanggal 18 Juli 1973 dengan Nomor B-2230184. Seiring dengan perkembangannya, pada tahun 1994 Madrasah Ibtidaiyah Almaarif 02

Singosari telah memperoleh jenjang akreditasi “Disamakan” berdasarkan Keputusan Kepala Kantor Departemen Agama Kabupaten Malang nomor M.m-16/05.03/PP.03.2/061/1994 tanggal 3 Januari 1994.

Perkembangan Madrasah Ibtidaiyah Almaarif 02 Singosari sangatlah pesat dapat dilihat dari jumlah siswa, tenaga pendidikan dan non kependidikan, serta prestasi yang diraih. Pada dekade terakhir, jumlah siswa terus meningkat, demikian hasil belajar siswa dalam mengikuti Ujian Akhir Sekolah, prosentase kelulusannya mencapai 100%. Begitu pula prestasi non akademik juga banyak diraih baik tingkat kecamatan, kabupaten, maupun provinsi. Kini jumlah siswa Madrasah Ibtidaiyah Almaarif 02 Singosari mencapai 386 siswa yang terdiri dari 12 rombel dengan status Terakreditasi “A” sesuai dengan Keputusan Kepala Kantor Departemen Agama Kabupaten Malang nomor A/KW.13.4/MI/866/2005 tanggal 23 Mei 2005.

Madrasah Ibtidaiyah Almaarif 02 Singosari terus berbenah diri dengan melengkapi sarana dan prasarana pendidikan. Pada tahun 2009, Madrasah Ibtidaiyah Almaarif 02 Singosari telah merenovasi gedung yang ada dan menambah fasilitas-fasilitas yang lainnya. Adapun fasilitas-fasilitas yang dimiliki sebagai berikut:

- a. Ruang kantor sebagai pusat pelayanan yang ditata rapi.
- b. Ruang kelas yang berjumlah 12.
- c. Perpustakaan sebagai media sekaligus sumber belajar siswa agar anak gemar membaca.
- d. Laboratorium Komputer/ Bahasa di YP Almaarif.

- e. Ruang Usaha Kesehatan Sekolah (UKS).
- f. Laboratorium IPA.
- g. Halaman sebagai tempat melaksanakan upacara bendera setiap hari senin dan senam setiap pagi.
- h. Masjid besar Hizbullah dan musholla sebagai laboratorium kegiatan keagamaan dan praktik sholat.
- i. Kamar kecil sebanyak 2 ruang, yaitu: 2 untuk guru dan 4 untuk siswa.
- j. Gudang untuk menyimpan alat peraga, dll.

1. Tim Pengembang Madrasah Ibtidaiyah Almaarif 02 Singosari

Tim Pengembang secara khusus terdiri dari tim perintis, tokoh masyarakat, praktisi, sedangkan anggota disesuaikan dengan kebutuhan serta pengembangan masa depan Madrasah Ibtidaiyah Almaarif 02 Singosari.

Adapun Tim Pengembangnya sebagai berikut:

- a. Prof. DR. K. H. M. Tholchah Hasan (Dewan Pembina YPA Singosari).
- b. Dra. Hj. Bariroh Thoyyib (tokoh masyarakat dan peduli pendidikan).
- c. Drs. K. H. M. Zannur Habib (Ketua YPA Singosari).
- d. Drs. H. M. Fauzan Habib (YPA Singosari).
- e. H. M. Ash'ari S., S.H (YPA Singosari).
- f. Moh. Ishom, S.Pd (Kepala Madrasah Ibtidaiyah Almaarif 02 Singosari).
- g. Hj. Hariroh Noor, S.Ag (Pembina/ guru senior Madrasah Ibtidaiyah Almaarif 02 Singosari).
- h. H. Masjidi AS, BA (Pembina/ guru senior Madrasah Ibtidaiyah Almaarif 02 Singosari).

- i. Juga masih banyak tokoh-tokoh masyarakat yang peduli dengan pendidikan.

2. Visi dan Misi Madrasah Ibtidaiyah Almaarif 02 Singosari

a. Visi Madrasah Ibtidaiyah Almaarif 02 Singosari

Terwujudnya peserta didik menjadi insan berkualitas yang:

- 1) Beraqidah Islam Ahlussunnah waljama'ah.
- 2) Beriman dan bertaqwa kepada Allah SWT.
- 3) Berprestasi dan berakhlaqul karimah.

b. Misi Madrasah Ibtidaiyah Almaarif 02 Singosari :

Terwujudnya madrasah sebagai kebutuhan hidup menuju hidup bahagia dunia akhirat dengan:

- 1) Menyelenggarakan pendidikan yang berhaluan Ahlussunnah waljama'ah.
- 2) Memantapkan pendidikan keimanan, ketaqwaan, dan akhlaqul karimah.
- 3) Meningkatkan tenaga kependidikan.
- 4) Mencetak generasi penerus bangsa yang terampil dapat menunjang kehidupan sehari-hari.
- 5) Mengadakan hubungan silaturahmi dengan orang tua murid dan masyarakat dalam rangka meningkatkan mutu pendidikan.
- 6) Menjalin kerjasama yang harmonis dengan mitra kerja dalam lingkungan Yayasan.

3. Tujuan Pendidikan Madrasah Ibtidaiyah Almaarif 02 Singosari

Tujuan Pendidikan Madrasah Ibtidaiyah Almaarif 02 Singosari adalah menunjang tercapainya tujuan Pendidikan Nasional dengan penjabaran sebagai berikut:

- a. Mendidik para siswa untuk menjadi manusia yang beriman dan bertaqwa kepada Allah SWT.
- b. Mendidik para siswa untuk menjadi manusia yang beraqidah Ahlussunnah wal jamaah.
- c. Mengembangkan kemampuan dasar berbahasa Arab dan bahasa Inggris.
- d. Mengembangkan kegiatan ekstrakurikuler yang berorientasi pada kecakapan (*life skill education*).
- e. Mengembangkan kemampuan/ keterampilan komputer.
- f. Mengembangkan kemampuan baca Al Quran.

4. Keadaan Siswa Madrasah Ibtidaiyah Almaarif 02 Singosari

Berikut ini keseluruhan data siswa Madrasah Ibtidaiyah Almaarif 02 Singosari.

Tabel 1.1
Data Siswa Madrasah Ibtidaiyah Al Maarif 02 Singosari

Kelas	Putra	Putri	Jumlah
I A	15	21	36
I B	16	21	37
II A	16	16	32
II B	16	16	32
III A	10	17	27

III B	15	16	31
IV A	19	15	34
IV B	17	14	31
V A	21	10	31
V B	17	11	28
VI A	17	17	34
VI B	17	16	33
Jumlah			386

Sumber data: Arsip TU MI Al-Maarif 02 Singosari Tahun 2013

5. Keadaan Guru dan Staf Madrasah Ibtidaiyah Almaarif 02 Singosari

Madrasah Ibtidaiyah Almaarif 02 Singosari memiliki 30 guru dan staf yang terdiri dari 15 GTY (Guru Tetap Yayasan), 7 GTT (Guru Tidak Tetap), 4 PTY (Pegawai Tetap Yayasan), dan 4 DPK dari Departemen Agama yang bertugas di bidang masing-masing

Tabel 1.2
Daftar Guru dan Staf Madrasah Ibtidaiyah Al Maarif 02 Singosari

No.	Nama	TTL	Status	Jabatan	Pend. Terakhir
1.	Hj. Hariroh Noor, S.Ag	Mlg,15/04/45	GTY	Guru	S1 Unisma
2.	Hj. Muzdalifah	Mlg,15/10/42	GTY	Guru	PGAN
3.	Hj.Umi Salamah, A.Ma	Mlg,12/10/54	GTY	Wali Kelas	D2 IAIN
4.	H. Masjidi AS, BA	Mlg,08/08/53	GTY	Guru	D2 Unisma
5.	Nurul Qomar, S.Pd	Mlg,04/03/64	GTT	Wali Kelas	S1 IKIP
6.	Moh. Kholili, S.PdI	Mlg,18/08/60	GTT	Dansos	S1 Unisma
7.	Dra. Sulistyawati	Mlg,09/09/65	GTY	Wali Kelas	S1 IKIP
8.	Drs. Iklil Fuad	Mlg,07/07/65	GTY	Guru	S1 Unisma

9.	Mufliah, S.Pd	Mlg,05/02/65	GTT	Lab.	S1 IKIP
10.	Muslimah, A.Ma	Mlg,19/11/69	GTT	Guru	D2 IAIN
11.	Moh. Ishom, S.Pd	Mlg,30/11/67	GTY	Kepala Madrasah	S1 Unisma
12.	Moh.Sholeh, S.Pd	Mlg,12/05/70	GTY	Ka. TU	S1 IKIP
13.	Fatih Fuaidin, S.H	Mlg,28/08/73	GTY	Kurikulum	S1 Wisnu Wardana
14.	Bawon Masyrifah, S.PdI	Mlg,03/01/74	GTY	UKS	S1 STIT
15.	Khoirul Anam, S.Pd	Mlg,15/08/75	GTY	Kesiswaan	S1 Unisma
16.	Saiful Nadlir, S.PdI	Mlg,18/11/74	GTY	Sarpras	S1 STIT
17.	Shohifatul Ilmiah, S.Pd	Pas,10/08/71	GTY	Wali Kelas	S1 IKIP
18.	Ach. Rusli I, A.Ma	Mlg,18/04/78	GTY	Humas	D2 IKIP
19.	Anas Fakhruddin, S.Pd	Mlg,18/09/73	DPK	Wali Kelas	S1 IKIP
20.	Thoha Masyhudi, S.Pd	Mlg,21/11/72	DPK	BP/ BK	S1 IKIP
21.	Lisa Lispriyanti, A.Ma	Sda,12/08/81	DPK	Perpustakaan	D2 Unesa
22.	Nikmah Kamalia	Mlg,27/04/85	GTY	Guru	S1 Unisma
23.	Salma Nur Fahima, S.Pt	Mlg,17/06/79	PTY	Bendahara	S1 Unibraw
24.	Chanit Faidah, A.Ma	Pas,09/07/69	GTT	Guru	D2 IKIP
25.	Sunariyati, A.Ma	Mlg,24/09/71	GTT	Guru	D2 IKIP
26.	Lilik Fauziyah, A.Ma	Mlg,28/03/80	PTY	Koperasi	D2 Unisma
27.	Ach. Mun'im	Mlg,07/06/87	PTY	Pramuka	S1 IKIP
28.	Yuliati, A.Ma	Mlg,17/07/67	DPK	Guru	D2 IKIP
29.	Adi Santoso	Mlg,23/11/87	GTY	Guru	D2 Unisma
30.	Suminto	Mlg,18/07/74	PTY	Kebersihan	SMP

Sumber data: Arsip TU MI Al-Maarif 02 Singosari Tahun 2013

6. Struktur Organisasi

Struktur Organisasi disusun demi ketertiban dan kelancaran penyelenggaraan kegiatan belajar mengajar di Madrasah Ibtidaiyah Almaarif 02 Singosari. Adapun struktur organisasi tersebut sebagai berikut:

STRUKTUR ORGANISASI MADRASAH IBTIDAIYAH ALMAARIF

02 SINGOSARI

Pelindung : Pengurus Yayasan Pendidikan Almaarif Singosari

PPAI : M. Hamdah

Kepala Madrasah : Moh. Ishom, S.Pd

Wakil Kepala : Fatih Fuaidin, S.H

Bendahara : Salma Nur Fahima, S.Pt

Ka. Tata Usaha : Moh. Sholeh, S.Pd

Bagian-bagian

a. Kesiswaan : Khoirul Anam, S.Pd

b. Sarpras : Saiful Nadlir, S.PdI

c. Humas : Ach. Rusli Iskandar, A.Ma

d. UKS : Bawon Masyrifah, S.PdI

e. Perpustakaan : Lisa Lispriyanti, A.Ma

f. Koperasi : Nikmah Kamalia

g. BP/ BK : Thoah Masyhudi, S.Pd

h. Tabungan : Dra. Sulistyawati

i. Laboratorium : Muflihah, S.Pd

j. Kebersihan : Suminto

Wali-wali Kelas

Wali Kelas I A : Bawon Masyrifah, S.PdI

I B : Lisa Lispriyanti, A.Ma

II A : Hj.Umi Salamah, A.Ma

II B : Ach. Rusli Iskandar, A.Ma

III A : Dra. Sulistyawati

III B : Shohifatul Ilmiah, S.Pd

IV A : Anas Fakhruhin, S.Pd

IV B : Nikmah Kamalia

V A : Thoaha Masyhudi, S.Pd

V B : Nurul Qomar, S.Pd

VI A : Khoirul Anam, S.Pd

VI B : Saiful Nadlir, S.PdI

MINISTRY OF RELIGION

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CONSULTATION PROOF

Name : Zulia Rahmawati
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 Thesis Title : The Development of Monopoly Game As A Learning Science Media to Increase The Result of Learning Process At 5th Grade of MI Al Maarif 02 Singosari

Num	Date	Consultation	Signature
1.	July, 26 th , 2013	Proposal Chapter I,II,III	1. <i>[Signature]</i>
2.	August, 23 th , 2013	Revised Title, Chapter I and III	2. <i>[Signature]</i>
3.	August, 27 th , 2013	Consultation Chapter I and III	3. <i>[Signature]</i>
4.	September, 2 nd , 2013	Revised and Consultation Product (Design and Technic of Monopoly Game), Chapter III	4. <i>[Signature]</i>
5.	November, 26 th , 2013	Revised and consultation product (design media) and result assessment from expert	5. <i>[Signature]</i>
6.	March, 28 th , 2014	Consultation Chapter IV, V and VI	6. <i>[Signature]</i>
7.	April, 21 th , 2014	Revised chapter V, consultation abstract	7. <i>[Signature]</i>
8.	May, 2 nd , 2014	Revised abstract, consultation Chapter I,II,III,IV,V and VI in english version	8. <i>[Signature]</i>
9.	May, 5 th , 2014	ACC overall	9. <i>[Signature]</i>

Malang, May 14th, 2014

Approved by,

Dean of Tarbiyah and Teaching Sciences Faculty

Dr. H. Nur Ali, M.Pd

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Nomor : Un.3.1/TL.00.1/1569/2013
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 Perihal : Penelitian

Kepada :
 Yth. Kepala MI AI – Ma'arif 2 Singosari
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Assalamu'alaikum Wr. Wb.

Kami berharap dengan hormat agar mahasiswa di bawah ini:

Nama : Zulia Rahmawati
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 Jurusan : Pendidikan Guru Madrasah Ibtidaiyah (PGMI)
 Semester : Ganjil, 2013/2014
 Judul Skripsi : Pengembangan Media Pembelajaran Permainan Monopoli pada Mata Pelajaran Ilmu Pengetahuan Alam Siswa Kelas 5 MI AI – Ma'arif 2 Singosari

dalam rangka menyelesaikan tugas akhir/menyusun skripsi yang bersangkutan mohon diberikan izin/kesempatan untuk mengadakan penelitian di lembaga/instansi yang menjadi wewenang Bapak/Ibu.

Demikian atas berkenan dan kerjasama Bapak/Ibu disampaikan terima kasih.

Wassalamu'alaikum Wr. Wb.

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21 Agustus 2013



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STATUS TERAKREDITASI "A"

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Nomor : 75 / D.I.16 / M2 / K / III / 2014

Yang bertanda tangan di bawah ini, Kepala Sekolah dari :

Nama : MUHAMMAD ISHOM, S.Pd
Nama Sekolah : MI Almaarif 02
Alamat : Jl. Masjid 33 Singosari Malang

Menerangkan dengan sebenarnya bahwa :

Nama : ZULIA RAHMAWATI
NIM. : 10140075
Fakultas : Ilmu Tarbiyah & Keguruan
Jurusan : Pendidikan Guru Madrasah Ibtidaiyah

Mahasiswa tersebut telah mengadakan penelitian sesuai dengan judul Skripsi sebagai berikut : **"Pengembangan Media Permainan Monopoli IPA Untuk Meningkatkan Hasil Belajar Siswa Kelas V Di MI Alma'arif 02 Singosari Malang"**

Demikian surat keterangan ini dibuat untuk dipergunakan sebagai mana mestinya.

Malang, 28 Maret 2014

Mengetahui,
Kepala Madrasah



Muhammad Ishom, S.Pd.

INSTRUMEN VALIDASI MEDIA UNTUK AHLI MATERI

(untuk mengukur kemampuan media monopoli sains dalam segi kemanfaatan, kejelasan materi, kesesuaian dengan tujuan pembelajaran)

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan media pembelajaran permainan Monopoli sains materi cara tumbuhan membuat makanan, maka peneliti bermaksud mengadakan validasi media pembelajaran yang telah diproduksi sebagai salah satu bahan pembelajaran. Untuk maksud diatas, peneliti mohon kesediaan Bapak/Ibu agar mengisi angket di bawah ini sebagai ahli materi. Tujuan dari pengisian angket adalah mengetahui kesesuaian pemanfaatan media pembelajaran ini sebagaimana yang telah dirancang berdasarkan disiplin ilmu pengetahuan alam. Hasil dari pengukuran melalui angket akan digunakan untuk penyempurnaan media pembelajaran permainan monopoli sains agar dapat dimanfaatkan dalam proses pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesediaan Bapak/Ibu sebagai ahli materi.

Nama = Agus Mukti W
Nip = 197209092008011021
Profesi = Dosen IPA
Instansi = FITK UIN Malen
Pendidikan = S-2 Paed. Kemer
Alamat = MSI E-20

B. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini, mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari media pembelajaran yang dikembangkan.
2. Berilah tanda (✓) pada salah satu angka pada masing-masing kolom sesuai dengan penilaian Bapak/Ibu. Dengan kriteria masing-masing angka adalah:
 - a. Angka 4 dengan kriteria sangat tepat/sangat valid
 - b. Angka 3 dengan kriteria cukup tepat/cukup valid
 - c. Angka 2 dengan kriteria kurang tepat/kurang valid
 - d. Angka 1 dengan kriteria sangat kurang tepat/kurang valid

3. Kecermatan dalam penilaian ini sangat diharapkan.

C. Pertanyaan-pertanyaan Angket

Aspek Penilaian	Indikator Penilaian	Pilihan jawaban			
		4	3	2	1
1. Organisasi isi materi	a. Kesesuaian tujuan pembelajaran dengan KD dan indikator	✓			
	b. Ketepatan sistematika / urutan materi yang disajikan dengan prosedur pembelajaran	✓			
	c. Kejelasan materi yang disajikan	✓			
	d. Tingkat kemudahan materi yang disajikan melalui media permainan monopoli		✓		
	e. Ketepatan pengemasan materi dalam bentuk soal yang terdapat pada kartu		✓		
	f. Kejelasan bahasa dalam materi yang disajikan	✓			
	g. Kedalaman materi yang disajikan		✓		
	h. Ketepatan penyajian materi		✓		
2. Soal evaluasi	a. Kesesuaian soal evaluasi dengan materi	✓			
	b. Jumlah soal yang diberikan	✓			
	c. Tingkat kemudahan soal evaluasi dengan pemahaman siswa	✓			
	d. Kejelasan bahasa dan istilah yang digunakan dalam soal	✓			
3. Pemanfaatan media	a. Efektifitas penyampaian materi dengan menggunakan media permainan monopoli	✓			
	b. Ketepatan penggunaan media permainan monopoli	✓			
	c. Kemenarikan kegiatan pembelajaran dengan menggunakan media permainan monopoli	✓			

	d. Tingkat kemudahan teknik permainan dengan pemahaman siswa	✓			
	e. Keefektifitasan pembelajaran menggunakan media permainan monopoli	✓			
	f. Kemungkinan penggunaan media dalam pembelajaran berikutnya.	✓			

D. Kritik dan Saran

Materi tersebut sendiri ~~se~~ cara sistemik & konseptual.

Malang, 28 Nopember 2013



Agus Mukh Wibowo
 NIP. 197807101900201102

INSTRUMEN VALIDASI AHLI MEDIA PEMBELAJARAN

(untuk mengukur kemenarikan media, kualitas fisik media, dan teknik permainan)

A. Pengantar

Berkaitan dengan pelaksanaan pengembangan media pembelajaran permainan monopoli sains kelas V tentang tumbuhan (cara tumbuhan membuat makanan), maka peneliti bermaksud mengadakan validasi media pembelajaran permainan monopoli sains yang telah diproduksi sebagai salah satu bahan pembelajaran. Untuk maksud di atas, peneliti mohon kesediaan Bapak/Ibu agar mengisi angket di bawah ini sebagai ahli media. Tujuan dari pengisian angket adalah mengetahui kesesuaian pemanfaatan media pembelajaran permainan monopoli sains ini sebagaimana yang telah dirancang berdasarkan disiplin ilmu pengetahuan alam. Hasil dari pengukuran melalui angket akan digunakan untuk penyempurnaan media pembelajaran permainan monopoli agar dapat dimanfaatkan dalam pembelajaran. Sebelumnya saya sampaikan terima kasih atas kesediaan Bapak/Ibu sebagai ahli media.

B. Identitas

Nama = *Ahmad Abtalchi, M.Pd*
Nip = *097610032003121004*
Profesi = *Dosen*
Instansi = *Fisika*
Pendidikan = *S2 Pend. Sains Fisika*
Alamat = *Jl. Sumpii 2 Barat Kav. A5*

C. Petunjuk Pengisian Angket

1. Sebelum mengisi angket ini, mohon terlebih dahulu Bapak/Ibu membaca atau mempelajari media pembelajaran yang dikembangkan.
2. Berilah tanda (✓) pada salah satu angka pada masing-masing kolom sesuai dengan penilaian Bapak/Ibu. Dengan kriteria masing-masing angka adalah:
 - a. Angka 4 dengan kriteria sangat tepat/sangat valid


- b. Angka 3 dengan kriteria cukup tepat/cukup valid
 - c. Angka 2 dengan kriteria kurang tepat/kurang valid
 - d. Angka 1 dengan kriteria tidak tepat/tidak valid
3. Kecermatan dalam penilaian ini sangat diharapkan.

D. Pertanyaan-pertanyaan Angket

Aspek penilaian	Indikator penilaian	Pilihan jawaban			
		4	3	2	1
1. Kesesuaian media dengan SK, KD, tujuan pembelajaran, materi dan alokasi waktu	a. Kesesuaian media permainan monopoli dengan materi.	✓			
	b. Kesesuaian media permainan monopoli dengan tujuan pembelajaran	✓	✓		
	c. Kesesuaian media dengan SK dan KD		✓		
	d. Kesesuaian media dengan alokasi waktu		✓		
2. Kualitas fisik	1. Kotak monopoli				
	a. Ketepatan pemilihan bentuk kotak media monopoli dengan karakteristik siswa		✓		
	b. Ketepatan pemilihan ukuran kotak media monopoli dengan karakteristik siswa		✓		
	c. Ketepatan pemilihan bahan kotak media monopoli dengan karakteristik siswa		✓		
	d. Ketepatan warna kotak media monopoli dengan karakteristik siswa	✓			
	2. Kartu				
a. Ketepatan pemilihan bentuk kartu dengan karakteristik siswa	✓				

	b. Ketepatan pemilihan bahan kartu dengan karakteristik siswa		✓		
	c. Ketepatan pemilihan warna dengan karakteristik siswa	✓			
	d. Ketepatan pemilihan ukuran kartu dengan karakteristik siswa	✓			
	e. Ketepatan pemilihan ukuran tulisan dengan karakteristik siswa	✓			
	3. Pion dan dadu:				
	a. Ketepatan pemilihan bentuk pion dengan karakteristik siswa	✓			
	b. Ketepatan pemilihan bahan pion	✓			
	c. Ketepatan pemilihan ukuran pion	✓			
	d. Ketepatan pemilihan warna pion	✓			
	e. Ketepatan ukuran dadu	✓			
	f. Ketepatan bahan dadu	✓			
	g. Ketepatan warna dadu	✓			
	4. Buku petunjuk dan buku materi :				
	a. Desain cover sesuai dengan isi materi		✓		
	b. Jenis huruf yang digunakan	✓			
	c. Ukuran huruf yang digunakan	✓			
	d. Gambar pada buku sesuai dengan materi		✓		
	e. Pemilihan gambar yang digunakan	✓			

	b. Ketepatan gambar pada aturan permainan c. Ketepatan warna pada aturan permainan d. Ketepatan bahasa pada aturan permainan 8. Kemenarikan kemasan media yang digunakan 9. Ketahanan/keawetan media untuk jangka waktu yang lama 10. Tingkat kemudahan dalam perawatan	✓ ✓ ✓ x/	✓ ✓	 ✓	
3. Kualitas dan teknik pemanfaatan media	a. Ketepatan teknik permainan media b. Pemanfaatan untuk pembelajaran kelompok c. Pemanfaatan untuk menarik perhatian siswa d. Ketepatan waktu yang dibutuhkan dalam pemanfaatan media.	 ✓	✓ ✓ ✓	 	
2. Kemenarikan media untuk dipakai lagi dalam pembelajaran			✓		


 11/11/2013
 A. Abstrak

E. Kritik dan saran

- Ilustrasi & perkelas
- Sibisamoyi dan digunakan oleh siswa
sebanyak mungkin

Malang, Nopember 2013

.....
NIP.