

**THE IMPLEMENTATION OF ARCS (ATTENTION,
RELEVANCE, CONFIDENCE, AND SATISFACTION)
STRATEGY TROUGH MULTIMEDIA AND SIMULATION TO
IMPROVE STUDENTS MOTIVATION ON SCIENCE
AT MADRASAH IBTIDAIYAH AL-FATTAH MALANG**

THESIS

By:

Ary Nurcahyanto

09140090



PRIMARY SCHOOL TEACHER EDUCATION DEPARTEMENT

TARBIYAH AND TEACHING SCIENCES FACULTY

THE STATE ISLAMIC UNIVERSITY OF MAULANA MALIK

IBRAHIM MALANG

July, 2013

**THE IMPLEMENTATION OF ARCS (ATTENTION,
RELEVANCE, CONFIDENCE, AND SATISFACTION)
STRATEGY TROUGH MULTIMEDIA AND SIMULATION TO
IMPROVE STUDENTS MOTIVATION ON SCIENCE
AT MADRASAH IBTIDAIYAH AL-FATTAH MALANG**

THESIS

Presented to Tarbiyah and Teaching Sciences Faculty
The State Islamic University of Maulana Malik Ibrahim Malang
In order to acquiring academic title Sarjana Pendidikan Islam
(S.Pd.I.)

By:

AryNurcahyanto

09140090



**PRIMARY SCHOOL TEACHER EDUCATION DEPARTEMENT
TARBIYAH FACULTY AND TEACHING SCIENCES
THE STATE ISLAMIC UNIVERSITY OF MAULANA MALIK
IBRAHIM MALANG**

July, 2013

APPROVAL SHEET

**THE IMPLEMENTATION OF ARCS (ATTENTION, RELEVANCE,
CONFIDENCE, AND SATISFACTION) STRATEGY TROUGH
MULTIMEDIA AND SIMULATION TO IMPROVE STUDENTS
MOTIVATION ON SCIENCE AT MADRASAH IBTIDAIYAH AL-
FATTAH MALANG**

THESIS

By:

Ary Nurcahyanto

09140090

Approved by:

Advisor

Dr. Abdul Malik Karim Amrullah, M. Pd.I.

NIP. 197606162005011005

July, 5th 2013

**Acknowledged by,
The Head of Education Department for Primary School Teacher**

Dr. Hj. Sulalah, M. Ag.

NIP. 1965 1112 1994 03 2002

LEGITIMATION SHEET

**THE IMPLEMENTATION OF ARCS (ATTENTION, RELEVANCE,
CONFIDENCE, AND SATISFACTION) STRATEGY TROUGH
MULTIMEDIA AND SIMULATION TO IMPROVE STUDENTS
MOTIVATION ON SCIENCE
AT MADRASAH IBTIDAIYAH AL-FATTAH MALANG**

THESIS

Prepared and arranged by

AryNurcahyanto (09140090)

Had been stood in front of examiners on July 12th 2013 with assessment excellent
and had been acceptable as one of requires for degree Sarjana Pendidikan Islam

(S.Pd.I)

The Board of Examiners

Signature

Chair of Examination

Dr.H.NurAli,M.Pd.

NIP. 1965040319980031002

:

Secretary of Examination

Dr. Abdul Malik KarimAmrullah, M. Pd.I.

NIP. 197606162005011005

:

Advisor

Dr. Abdul Malik KarimAmrullah, M. Pd.I.

NIP. 197606162005011005

:

Main Examiner

Muhammad Yahya,M.A,Ph.D.

NIP. 197406142008011016

:

Acknowledged by

The Dean of Tarbiyah and Teaching Sciences Faculty

Dr.H.NurAli,M.Pd.

NIP.1965040319980031002

DEDICATION

Along with gratitude to the ALLAH SWT for all the prompts and intercession of his prophet Muhammad SAW, I dedicate this work in nothing else except for special people that I respect and obey;

my beloved father "Samsul Arifin" and my mother "Iva winarni"

For All of My Family, who has motivate and encourage me

Especially my sister Elvira Nur Rahmawati and also my classmate

"Samrotul Fitriana",

Rizal, Mifta, Hendri, Ochi, Yanis, Eka, Rizka, Rosyid, Hilda, Niken, Nurul, Rani, Giska. And all my friend from PGMI 2009

And Thanks for my Advisor and The big Family of MI Al-Fattah

Thanks for all, who help me finish this thesis.....

MOTTO



وَلَا تَهِنُوا وَلَا تَحْزَنُوا وَأَنْتُمْ الْأَعْلَوْنَ إِنْ كُنْتُمْ مُؤْمِنِينَ

"So do not weaken and do not grieve, and you will be superior if you are [true] believers." (Al-Quran: Ali Imran Verse 139)

"You can teach a student a lesson for a day; but if you can teach him to learn by creating curiosity, he will continue the learning process as long as he lives."

(Clay P. Bedford)

"A teacher affects eternity he can never tell, where his influence stops."

(Henry Brooks Adams)

"There are obviously two educations. One should teach us how to make a living and the other how to live."

(James Truslow Adams)

Dr. Abdul Malik Karim Amrullah, M. Pd. I.

The lecturer of Tarbiyah and Teaching Sciences Faculty

The State Islamic University of Maulana Malik Ibrahim Malang

ADVISOR OFFICIAL NOTE

Matter : Ary Nurcahyanto's thesis

Malang, July, 5th 2013

Appendixes : 4 (four) Exemplar

Dear

Dean of Tarbiyah and Teacher Sciences Faculty

The State Islamic University of Maulana Malik Ibrahim

at

Malang

Assalamualaikum 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 :

Name : Ary Nurcahyanto

Student Number : 09140090

Department : Primary School Teacher

Thesis title : **The implementation of ARCS (Attention, Relevance, Confidence and Satisfaction) Strategy through Multimedia and Simulation to Improve Students Motivation on Science at MI Al-Fattah Malang.**

As the advisor, we argue that the thesis has been proposed and tested decent.

So, please tolerate presence.

Wassalamu'alaikum Wr. Wb.

Advisor

Dr. Abdul Malik Karim Amrullah, M. Pd. I
NIP : 197606162005011005

STATEMENT

By this statement, I hereby declare, that in this paper there is no work that has proposed to acquire a degree at any university, and as long as my experience there is no work ever written or opinions of other people, except that I have already write referred in this manuscript and mentioned bibliography.

Malang, July 4th 2013



Ary Nurcahyanto

ACKNOWLEDGMENT

Alhamdulillah, all praises to Allah, the most Gracious and most Merciful who has given me guidance and blessing in finishing this thesis, entitled *“The implementation of ARCS (Attention, Relevance, confidence, and satisfaction) strategy through multimedia and simulation to improve students motivation on science at MI Al-Fattah Malang*. Shalawat and Salam are also delivered to the Prophet Muhammad SAW who has brought Islam as the Rahmatan lil al-amin.

This thesis was focused on implementation of ARCS (Attention, Relevance, confidence, and satisfaction) strategy to improve student’s motivation on science, and the research was conducted to find out the effectiveness of ARCS strategy through multimedia and simulation for 5th grade student at MI Al-Fattah Malang.

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

1. Prof. Dr. H. Mudjia Rahardjo, MSc as a rector of the State Islamic University of Maulana Malik Ibrahim Malang.
2. Dr.H.Nur Ali, M.Pd as the Dean of Tarbiyah And Teaching Sciences Faculty
3. Dr. Hj. Sulalah, M. Ag as the Head of Primary School Teacher Education Department.

4. Dr. Abdul Malik Karim Amrullah, M. Pd. I as the advisor who has spent his time energy and mind, to provide guidance, motivation and advice for finishing this thesis.
5. Samsul Arifin and Iva winarni (my beloved father and mother).
6. All the lectures and staff of Tarbiyah Faculty at the State Islamic University of Maulana Malik Ibrahim Malang.
7. Mrs. Indah Sulistyaningtyas. S. Pd. as a natural science teacher at MI Al-Fattah Malang who have a lot opportunity and direction to write this thesis.
8. All of my beloved friend in PGMI 2009 also my classmate (Samrotul Fitriana ,Rizal, Yanis, Mifta, Hilda, Giska, Rizka, Hendri, Nurul, Niken, Rossy, Rani, Eka, Rosyid)

The author knew that there are still deficiencies in the writing of this thesis. Therefore, the author hopes to the suggestion 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, July, 4th 2013

Author

TABLE OF LIST:

Table 3.1 data and data source	38
Table 3.2 the key Informant of research.....	38
Table 4.1 the data of Student Amount at MI Al-Fattah.....	49
Table 4.2 the Data of Teacher at MI Al-Fattah Malang.....	49
Table 4.3 The data of facility at MI Al Fattah Malang.....	50
Table 4.4 Data of student and test result.....	53
Table 4.5 Data of pretest Result.....	60
Table 4.6 Data of student motivation.....	71
Table 4.7 Revision check of cycle I.....	73
Table 4.8 Score motivation of cycle II.....	82

TABLE OF PICTURE

Picture 2.1 Marslow Hierarchy of need.....	17
Picture 3.3 component of data Analysis.....	42
Picture 3.4 the phase of research.....	43
Picture 4.1 pretest condition.....	59
Picture 4.2 cycle I when student do an experiment.....	66
Picture 4.3 student card activity.....	77
Picture 4.4 quiz activity.....	78
Picture 4.5 student receive award.....	80
Picture 5.1 result of motivation assessment in cycle I.....	88
Picture 5.2 result of motivation assessment in cycle II.....	88

APPENDIX LIST

Picture of pretest.....	94
Picture of cycle I	95
Picture of cycle II.....	97
Picture of student card activity	99
Picture of interactive experiment	100
Picture of simulation.....	101
Picture of video.....	103
Picture of interactive quiz.....	104
Teaching planning.....	105
Student worksheet.....	117

TABLE OF CONTENT

COVER PAGE

TITLE PAGE.....	i
APPROVAL PAGE.....	ii
LEGIMATION SHEET.....	iii
DEDICATION.....	iv
MOTTO.....	v
ADVISOR OFFICIAL NOTE.....	vi
STATEMENT PAGE.....	vii
ACKNOLEDGMENT.....	viii
DIRECTION OF ARABIC-LATIN TRANSLATION.....	ix
TABLE OF LIST.....	x
TABLE OF PICTURE.....	xi
APPENDIX LIST.....	xii
TABLES OF CONTENTS.....	xiii
ABSTRAK.....	xiv

CHAPTER 1 INTRODUCTION

A. Background of study.....	1
B. Focus of Study.....	5
C. The objective of Study.....	5
D. The Significant of Study.....	6
E. Scope of Research.....	7
F. Definition of key Term.....	7
G. Previous study.....	9
H. Systematic of Study.....	11

CHAPTER II REVIEW OF RELATED LITERATURE

A. Natural Science Learning	13
1. Science learning definition.....	13
2. Science Basic skill.....	13
B. The Definition of Strategy.....	14
1. ARCS Strategy.....	15

a. Attention.....	15
b. Relevance.....	17
c. Confidence.....	22
d. Student satisfaction.....	23
C. Motivation	25
1. The ideals of aspiration of students.....	25
2. The ability of students.....	25
3. The condition of students.....	26
4. Environmental condition of students.....	26
D. Learning Media.....	26
1. Definition of Multimedia.....	26
2. Multimedia for Learning Process.....	28
3. Characteristic Multimedia.....	29
4. Advantage of Multimedia.....	30
5. Disadvantage of Multimedia.....	31
E. Definition of Simulation.....	32
1. Simulation on education and training.....	33

CHAPTER III RESEARCH METHOD

A. The Approach and Type of research	34
B. Presence of Researcher	35
C. The Research site.....	36
D. The Source of Data	37
E. The Strategies of Data collection.....	38
F. Data Analysis.....	41
G. Phase of Research.....	44

CHAPTER IV RESEARCH FINDINGS

A. Research data.....	48
B. Research description	54
C. Pretest.....	57
D. Cycle I.....	62
E. Cycle II.....	74

CHAPTER V DISCUSSION

A. Planning process in Implementing ARCS trough Multimedia and simulation.....	85
B. Process in Implementing ARCS trough multimedia and simulation.....	86
C. Process of assessment in implementing ARCS trough multimedia and simulation.....	87

CHAPTER VI CONCLUTION AND DISCUSSION

A. Conclusion.....	90
--------------------	----

B. Suggestion	91
BIBILIOGRAPHY.....	.93
APPENDIX.....	.97



ABSTRAK

Ary Nurcahyanto.2013: The Implementation of ARCS (Attention, Relevance, Confidence, and Satisfaction) Strategy through Multimedia and Simulation to Improve Student's Motivation on Science at MI Al-Fattah Malang. Thesis, Program of Study Islamic Elementary Education, Tarbiyah and Teaching Sciences Faculty, The State Islamic University of Maulana Malik Ibrahim Malang. Dr. Abdul Malik Karim Amrullah, M. Pd.I

Key word: **ARCS (Attention, relevance, confidence, and satisfaction)**
Multimedia, simulation, Motivation.

Motivation have big impact for student learning result, student with less motivation are showing negative behavior like lazy, not confidence with their self, and they feel unsatisfied with the learning result, if this problem not solved immediately it will become serious problem for the student. Student with less motivation also find difficulty in understanding the material and unable to explore more knowledge from the subject especially in science, although student can explore the material form interaction with environment, they still feel confused with the material.

One of problem related with motivation of student is learning proses still use conventional method with fewer stimuli for the student, this method just explains the material without motivated student to explore more about the material in their environment through learning science.

Based on the problem above, to motivated student in learning need suitable strategy, one of strategy to motivated student is ARCS (attention, relevance, confidence, and satisfaction) that have many steps to improve student motivation. The research of this strategy was conducted at MI Al-Fattah Malang and the formulation of problem on this research are : 1)How the planning process of Implementation ARCS method trough multimedia and simulation to improve student motivation on science at MI Al Fattah Malang,2)How is the process implementation of ARCS method trough multimedia and simulation to improve student motivation on science at MI Al Fattah Malang and 3)How the process of assessment in Implementing ARCS method trough multimedia and simulation to improve student motivation on science at MI Al Fattah Malang.

This research use classroom action research. The researcher technique in data collection conducted by using observation, interview and documentation. Qualitative data was analyzed by descriptive qualitative and quantitative data is analyze by quantitative data analysis. Based on observation and empirical data analysis result of Implementation of ARCS method trough multimedia and simulation, the strategy can improve student motivation on natural science. The improvement of this strategy form cycle I to cycle II is from 63, 35 % improve to 98, 35% and the average score from 75 under the criteria of standard 78 improved to 85.

This data also indicated that the ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation can improve student motivation in learning science at MI Al-Fattah Malang.

ABSTRAK

Ary Nurcahyanto.2013: The Implementation of ARCS (Attention, Relevance, Confidence, and Satisfaction) Strategy through Multimedia and Simulation to Improve Student's Motivation on Science at MI Al-Fattah Malang. Thesis, Program of Study Islamic Elementary Education, Tarbiyah and Teaching Sciences Faculty, The State Islamic University of Maulana Malik Ibrahim Malang. Dr. Abdul Malik Karim Amrullah, M. Pd.I

Motivasi mempunyai pengaruh yang besar terhadap pencapaian belajar siswa, motivasi belajar yang rendah menimbulkan dampak negatif pada diri siswa, seperti rasa malas, kurang percaya diri, dan kurang puasnya siswa terhadap materi yang apabila dibiarkan menjadi masalah yang serius, kurangnya motivasi pada siswa juga mempunyai dampak pada interaksinya dengan lingkungan mereka khususnya lingkungan sekitar yang sebenarnya banyak sekali dipelajari dari mata pelajaran IPA, seringkali siswa merasa bingung dengan hal-hal yang mereka jumpai dalam pembelajaran IPA karena pembelajaran yang digunakan masih menggunakan metode konvensional yang kurang memberikan stimulus untuk siswa untuk lebih mengeksplorasi apa yang ada disekitar mereka melalui pelajaran IPA.

Beranjak dari permasalahan di atas, maka diperlukan strategi yang tepat dalam meningkatkan motivasi siswa, dan salah satu strategi yang tepat untuk meningkatkan motivasi siswa adalah dengan ARCS (Attention, relevance, confidence, and satisfaction) yang mempunyai beberapa langkah dalam meningkatkan motivasi siswa.

Penelitian ini dilaksanakan di MI Al-Fattah Malang adapun rumusan masalah dalam penelitian ini adalah Bagaimana implementasi ARCS (Attention, relevance, confidence, and satisfaction) strategy through interactive multimedia and simulation to improve students motivation on science at MI Al-Fattah Malang. Sedangkan tujuan penelitian ini adalah mendeskripsikan implementasi ARCS (Attention, relevance, confidence, and satisfaction) strategy through interactive multimedia and simulation to improve students motivation on science at MI Al-Fattah Malang, serta mengetahui bagaimana evaluasi dari implementasi ARCS (Attention, relevance, confidence, and satisfaction) strategy through interactive multimedia and simulation to improve students motivation on science at MI Al-Fattah Malang

Penelitian ini menggunakan desain penelitian tindakan kelas (*class-room action research*) dengan jenis penelitian mandiri. Teknik pengumpulan data dilakukan dengan menggunakan observasi, wawancara dan dokumentasi. Data yang bersifat kualitatif dianalisa dengan analisa deskriptif kualitatif sedangkan data yang bersifat kuantitatif dianalisa dengan analisa deskriptif kuantitatif.

Dari hasil observasi dan data empiris di lapangan menunjukkan bahwa, bentuk penggunaan strategi ARCS dengan multimedia dan simulasi dapat meningkatkan motivasi siswa dari 63,35% menjadi 98,35 % dan nilai rata-rata yang sebelumnya hanya 75 yang kurang dari KKM 78 menjadi 85. hal tersebut menunjukkan adanya hubungan peningkatan motivasi dan prestasi belajar siswa.

CHAPTER I

INTRODUCTION

A. The Background of Study

Learning result can be indicated as students achievement in learning process, from learning result teacher can find the problem of learning and the difficulty of student in understanding material. Some indications of problem are influenced by ineffective learning and less of student motivation in class. This factor has negative impact for the student in understanding difficult material.¹

Without motivation, the learning become passive and the student result become stagnant, less motivation also has negative impact for the learning, Student learning result become decrease if the teacher can't chose the effective method to improve student motivation.

In the learning process, student needs satisfaction in learning and they need a real practice in daily life.

Sometimes we need a few times for make student able to expressing their self, they need real condition in learning and have proudness after learning something, and they also need fun interaction and interactive media to express their imagination and basic concept of the material, also the material what they get from school.

¹ Daryanto, *Media Pembelajaran Perananya Sangat Penting Dalam mencapai tujuan pembelajaran*, 2010 hal 1

As a teacher we should give the student motivation and let them to play and explore their self, because with doing something or learning with fun they will get more than just learning with reading or only stay in class.

Children's are motivated when they learn by play and do the activity, as Imam al-ghazali (1059-1111) said with forcing child to learn and not give them time to play will defeat their heart,so the student become lazy to learn.²

So to make the student not bored,the teacher need an interactive technique that can be used for helping the students in learning , especially in mastering material because most of the students are not interesting when they learn by lecturing and read the text alone and learning by their self, its more attractive if they get chance to express their self and get motivation by encourage their spirit with compliment.

One of subject that difficult to learn effectively by student is natural science, the student only get the material on book and abstract information in internet although science can be found in their life they aren't get a chance to give an idea or argument because the lesson just focused on text book and after the lesson student only get the material and they don't have motivation to learn again and apply in daily life.

In natural Science Study Program, Science skill is separated into some aspect. They are process, act/behavior, and product. In science subject, the

² Andang ismail *Education Games*,Bandung 2010 hal 14

students are forced to memorize the material. In fact, science unable to understanding only by reading.

From the interview done by the researcher to Mrs. Indah as one of the science teachers and vice principal of curriculum field in MI Al-Fattah. Malang, she said:

“untuk menangani kelas besar yang terdiri dari empat puluh dua orang ini diperlukan metode yang bagus,selama ini saya menggunakan multimedia dan multi metode,namun beberapa siswa terkadang tidak ikut aktif dalam pembelajaran ada yang melamun dan bahkan bermain sendiri,jadi sangat diperlukan metode yang membuat siswa dapat aktif secara keseluruhan khususnya yang dapat memotivasi seluruh siswa untuk aktif dalam pembelajaran.”³

(Interview translation: to manage a large class that consists of forty two students, the teacher needs a good method, when I teach the student, I use multimedia and multi method, but sometimes some of student becomes passive, they daydream and prefer play than listen their teacher, so to solve that problem the teacher need suitable method to make all student more active, especially the method to motivate all of student in learning process).

Form the interview the teacher said that some student are passive and sometimes bored to learn, and need the method that make all student active and have high motivation in learning.

As the observation there are many problem that give negative impact for motivation like the student attention is less, student is difficult to learn by their self they prefer talk to the other student, not focused on teacher, and sometimes doing another activity when the teacher give the material, this

³ ” Interview with Mrs.Indah Sulistyowati science teacher of 5th gradeon Mei 20, 2012.

situation isn't not good for learning process because with the problem of student the result of learning will be decrease or not reach the target.

As the statement above the one strategy that able to improve student motivation and satisfaction in learning is ARCS strategy.

The ARCS model of motivational design consists of a set of categories of motivational concepts and strategies that are derived from a synthesis of the research on human motivation combined with a review of successful motivational practices.⁴

With this strategy student motivation are increase with the motivation form the teacher and give the student satisfaction in learning especially in science that need complex process of learning. Based on the explanation above that the learning process should use the appropriate media and methods to facilitate students' understanding and improving student achievement in science subjects, so authors want to research with the title :**"THE IMPELEMENTATION OF ARCS (ATTENTION, RELEVANCE, CONFIDENCE, AND,SATISFACTION) STRATEGY THROUGH MULTIMEDIA AND SIMULATION TO IMPROVE STUDENTS MOTIVATION ON AT MI AI-FATTAH MALANG"**.

⁴ Keller, J.M.Motivational Design for Learning and Performance: The ARCS Model Approach.2010

B. The Focus of Study

Based on the background of existing problems above, the main problem in the study was formulated as follows :

1. How is the planning process in implementing of ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang?
2. How is the process of implementation ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang?
3. How is the process of assessment in implementation of ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang?

C. The Objectives of Study

Based on the focus of study, the objectives of the study that should be achieved are:

1. Description of planning process in implementation of ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang.

2. Description of the process in implementation ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang.
3. Description of process assessment in implementation of ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang.

D. The Significance of Study

This research is eexpected to be able give advantages for :

1. Teacher

- a. The result of this research will help the teacher identify the problem of student in classroom, and the result also help as a consideration to choice effective model, strategy, and media for the student.
- b. The Implementation of ARCS(Attention, Relevance, Confidence, and Satisfaction) Strategy trough multimedia and simulation can help the teacher explain material to student in learning process

2. Students

- a. Help Student to understanding the material and give them motivation to learn more about science.
- b. The Implementation of ARCS help to flourishing student's interest with the material and motivated them in learning.

3. MI Al-Fattah

By the result of this research with the title "Implementation of ARCS (Attention, Relevance, Confidence, and satisfaction) strategy to improve student motivation on science 5th grade by using multimedia and simulation" as a reference in preparing the learning process, especially in natural science subject and the material is about "the characteristic of thing change process in 5th grade".

4. The Next researcher

- a. The result of this research is expected to be a reference about natural science teaching and effective media selection.
- b. The result of this research is expected to be a reference to develop research in other media and strategy in the next research.

E. Scope of Research

The researcher focuses this research on the implementation of ARCS (attention, relevance, confidence, and satisfaction) strategy through multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang, and the topic of material is "The process of thing changing .

F. Definition of the key terms

In order to avoid misunderstanding of the reader, it is very important to define the key terms used in this research, it is:

1. The ARCS

The ARCS model is a problem solving approach to designing the motivational aspects of learning environments to stimulate and sustain students' motivation to learn. There are two major parts to the model.

The first is a set of categories representing the components of motivation. These categories are the result of a synthesis of the research on human motivation. The second part of the model is a systematic design process that assists you in creating motivational enhancements that are appropriate for a given set of learners.

The synthesis allows you to identify the various elements of student motivation, and the design process helps you profile the motivational characteristics of students in a given learning environment and then design motivational tactics that are appropriate for them.

The model has been used and validated by teachers and trainers in elementary and secondary schools, colleges, and universities, and in adult learning settings in corporations, government agencies, nonprofit organizations, and military organization.

In other words, in virtually every setting in which there is a requirement for people to learn. It has also been used around the world on virtually every continent, and has been used extensively

in Asia, Europe, and Latin America. Numerous research reports verify its validity and usefulness.

Elaborations of the categories of the ARCS model and the design process are contained in the remaining many parts . Each of those parts contains references for further reading. Following are three references mentioned above that describe the theoretical foundation of the ARCS model and the applied version of it.⁵

2. Multimedia

Multimedia included combination of audio and visual it mean all instrument for support the learning process like slide of presentation, video, the experiment set for student, quiz and another media that support the material .

3. Simulation

Simulation it's a media that show material or experiment process like the real practice, its help student to see the result without wasting a time, this method use video or animation of simulation.

G. The Previous of Study

In this topic of research there were several researchs and information that can be considered as reference: “Upaya meningkatkan pembelajaran IPA melalui model pembelajaran ARCS (Attention, Relevance, Confidence, and Satisfaction) pada siswa kelas IV SDN Jatimuluo 1 Kecamatan Kauman

⁵ Keller, J. M. Development and use of the ARCS model of motivational design. *Journal of Instructional Development*, 10(3), 2 – 10. (2010)

Kabupaten Tulungagung by Widha Bhinartika from Universitas Negeri Malang, Program Studi S1 PGSD. 2011.

The results showed that the use of the ARCS model of learning science for fourth grade students of SDN Jatimulyo 1 with basic competencies "to explain the change of sound energy through the use of musical instruments" can be implemented effectively. This is demonstrated by the successful acquisition of a teacher in the application of the ARCS model of cycle I is 82.22% and increased in the second cycle to be 92.22%. Increased student activity, 69.7 to 84.5 cycles I cycle II. Learning outcomes also increased from an average of 71 to 64% on the thoroughness I cycle an average of 88.27 with 82% achieving grade thoroughness in the second cycle. Based on this research, it can be suggested in this applying ARCS model of the teacher should be prepared carefully so that problems will not run out of issues that should be discussed students. To make it easier to condition and well-organized classroom, teachers are expected to give a good reinforcement for students to more active, may also award a prize.⁶

The research was success in developing the student motivation, but not all student active and discussion.it need more encouragement to make the student brave and confident to ask. The lack of the research is there is no evaluation for student, and just give them motivation and knowing their enthusiasm from interview.

⁶ Widha Bhinartika, "Upaya meningkatkan pembelajaran IPA melalui model pembelajaran ARCS (Attention, Relevance, Confidence, Satisfaction) pada siswa kelas IV SDN Jatimulyo 1 Kecamatan Kauman Kabupaten Tulungagung 2011 Universitas Negeri Malang,

For this reason this research will be continue in this thesis and give more fun and interactive lesson and evaluation to student with giving multimedia and simulation that make the result better than the research before and improving the result with ARCS strategy.

H. The Systematic of Discussion

The writing of this the thesis will be divided into chapters, with a view to facilitate the reader in understanding the content and review of this paper.

The following systematic are:

Chapter I : An introduction, this chapter consists of the key points: background of the research, problem of the research, objectives of the research, the significance of the research, scope of the study, and systematic of discussion.

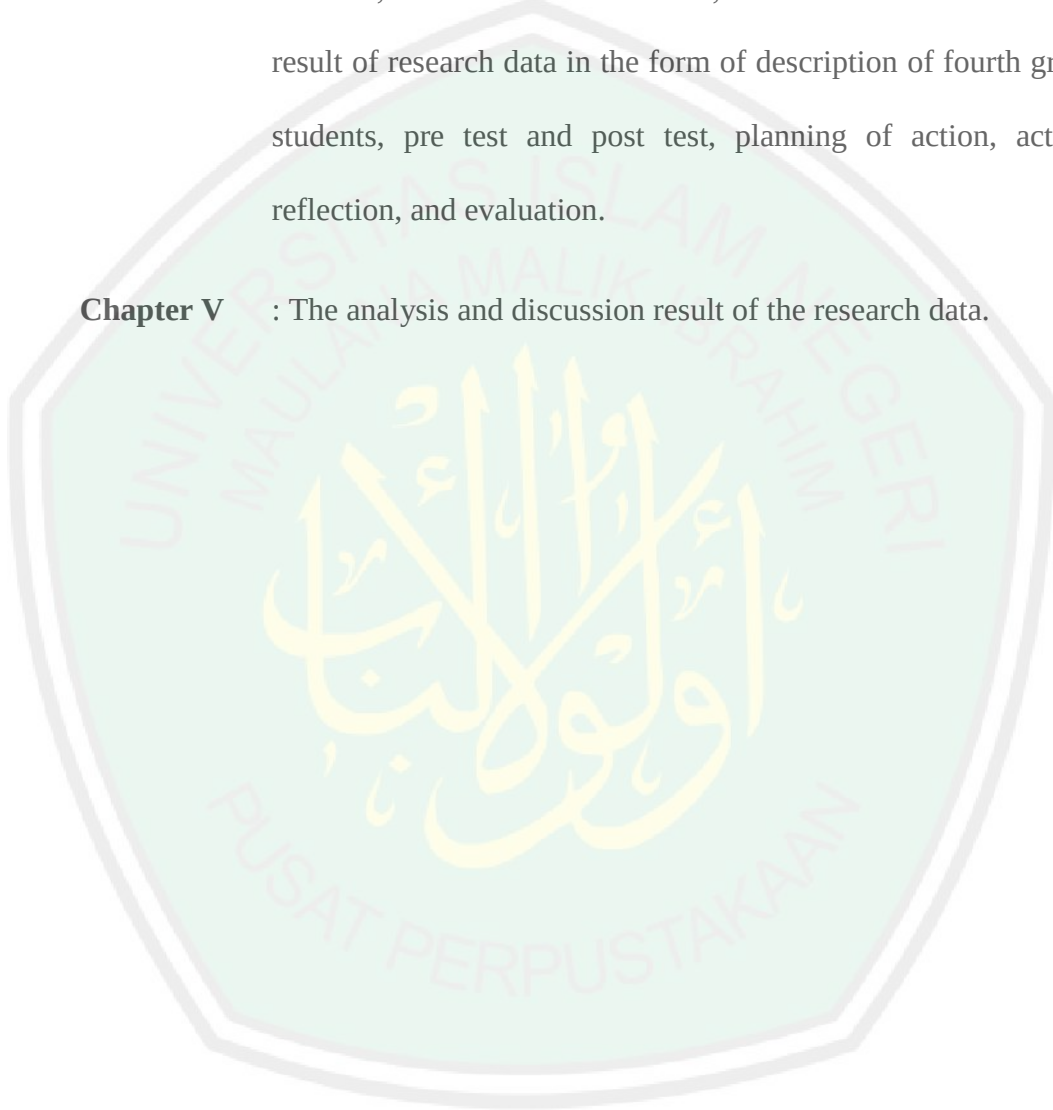
Chapter II: Literature review. In this chapter the researcher discusses about Implementation of ARCS (attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang.

Chapter III: Discuss about research method, approach and type of research, the attendance of researcher, research sites, data source, technique of data collection, analysis of data, checking validity

Chapter IV : The result of the research. In this discussion contains about the object of research that includes profile of research sites includes

the history of MI Al-Fattah, vision and mission of school, the goal of school, structure of organization, data of teacher and students, media and infrastructure, and the discussion about the result of research data in the form of description of fourth grade students, pre test and post test, planning of action, action, reflection, and evaluation.

Chapter V : The analysis and discussion result of the research data.



CHAPTER II

REVIEW OF RELATED LITERATURE

A. Natural science learning

1. Science learning definition

Natural Sciences (IPA) defined as a collection of knowledge that guided arranged. This is consistent with curriculum of KTSP (Department of National Education, 2006) that "science is concerned with finding out about the systematic nature, so that not only the mastery of knowledge in the form of a collection of facts, concepts, or principles, but also is a process of discovery". Besides IPA is also a science that is empirical and discuss about the facts and natural phenomena. Facts and natural phenomena that make learning science is not only verbal but also factual.

This suggests that, the nature of science as a process of learning is needed to create an empirical science and factual information in learning . The nature of science as a process of learning is realized by implementing the training process skills of science discovered how to make the product.

2. Science basic skill

skills that need to be trained in the process of learning science skills include basic process such as observing, measuring, classifying, communicating, recognize the relationship of space and time, and integrated process skills such as designing and conducting experiments

that include preparing a hypothesis, determine the variable, preparing operational definitions, interpreting the data , analyze and synthesize data.¹

basic skills in the process approach is the observation, counting, measuring, classifying, and making hypotheses. It can be concluded that the skills in the learning process in elementary science includes basic skills and integrated skills. Both of these skills can train students to find and solve problems scientifically to produce products that science facts, concepts, generalizations, laws and new theories.²

According to the Wina Sanjaya method is way to implement the plans that has been prepared in concrete, in order to the significance that has been arranged can be achieve optimally.³

B. Definition of Strategy

Learning Strategy is list of planning activity that implement method and various resource in learning .Learning strategy consist of specifics model, method and technique of learning. The strategy of learning is arranged for the goal of learning.⁴

The Strategy that we implemented in this paper is ARCS, the ARCS strategy consist of four aspect to improve motivation there are

¹ Asy'ari, Muslichah *Hakekat Pembelajaran IPA di Sekolah Dasar* 2006 hal 22

² ibid

³ Wina sanjaya, *strategi pembelajaran* (jakarta : kencana, 2007), hlm. 147

⁴ <http://dedi26.blogspot.com/2012/06/pengertian-strategi-pembelajaran.html> accessed on June 10, 2013 at 02.00 AM

Attention phase, Relevance phase, confidence phase, and satisfaction phase.

1. ARCS (Attention, Relevance, confidence, and satisfaction)

ARCS (Attention, Relevance, confidence, and satisfaction) is a strategy that designed by John Teller to motivated student learning. Keller has compiled a set of principles of motivation that can be applied in the learning process, known as the ARCS Model.

Any teacher attempted to implement the principles of motivation in the learning process, remember the key for conditioning students in learning is the teacher.⁵

These four motivational conditions are described as follows: Attention, Relevance, Confidence Satisfaction or ARSC model.

a. Attention

Attention is a form of guidance to be consulted / centralization of power and psychic energy in dealing with an object, in this case the events of the process of teaching, learning in the classroom, attention can mean the same as the concentration, can also point to an interest 'momentum' is feeling attracted to a problem are being studied.⁶

⁵ Suciati dkk, Teori Belajar dan motivasi, 2001, Proyek pengembangan UT Ditjen Pendidikan.

⁶ WS Winket Psikologi Pengajaran, 1987, Gramedia Jakarta.

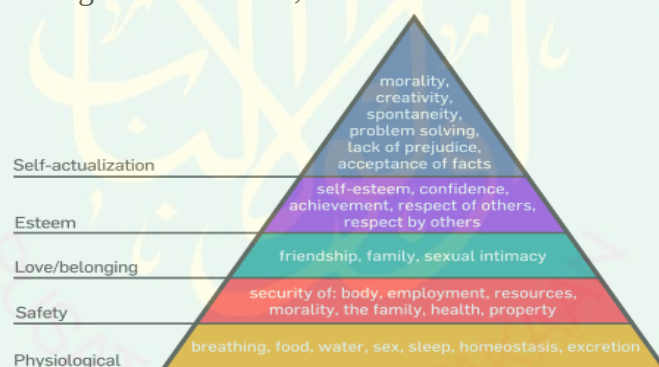
The characteristic of Attention phase are:

- 1) Keller attention can be gained in two ways: (1) Perceptual arousal – uses surprise or uncertainty to gain interest. Uses novel, surprising, incongruous, and uncertain events; or (2) Inquiry arousal – stimulates curiosity by posing challenging questions or problems to be solved.
- 2) Methods for grabbing the learners' attention include the use of:
 - a) Active participation -Adopt strategies such as games, roleplay or other hands-on methods to get learners involved with the material or subject matter.
 - b) Variability – To better reinforce materials and account for individual differences in learning styles, use a variety of methods in presenting material (e.g. use of videos, short lectures, mini-discussion groups).
 - c) Humor -Maintain interest by use a small amount of humor (but not too much to be distracting)
 - d) Incongruity and Conflict – A devil's advocate approach in which statements are posed that go against a learner's past experiences.
 - e) Specific examples – Use a visual stimuli, story, or biography.
 - f) Inquiry – Pose questions or problems for the learners to solve, e.g. brainstorming activities.

b. Relevance

Generally, in the learning process when a person does not have a strong motivation in learning, it was impossible they will be able learn well. The facilitator task generates and creates the creative ways to motivate participants. So to fulfill the desires we should set off the foundation and we need to motivate student and create interactive learning.

The motivation requirements are come from basic psylogical need and the highest motivation is come from self-actualization, according Maslow's seven of which are biological needs to include the non-biological self-esteem, to actualize them.



Picture 2.1 Maslow's hierarchy of need

An interpretation of Maslow's hierarchy of needs, represented as a pyramid with the more basic needs at the bottom.

Motivation of the student is affected by competition in their group, teacher can motivate student when they make a group for experiment or discussion the teacher should praise and give a reward for them to to

motivate student in group, by motivate student in group the student will shows the person's desire to gather in social community.

Sometime student want to dominate others but the teacher should implemented sportsmanship to make fair and balance competition in group. the teacher also understanding Personal needs of the student. Personal need (basic needs) is one of factor that able to motivated student personal need are regrouped into categories of personal motives, instrumental motives, and actual motif.

The first value of personal motives, according to Me Chelland includes three things;

- a. need for achievement
- b. used for power
- c. need for affiliation

The second value is instrumental value, instrumental value is an indicator of success in doing a task it also considered as a step to achieve further success. Three cultural values, cultural value is the objectives to be consistent or suitable with the value of society or by the small group in environment such as family, and friends.⁷

Students who eager to do their best when achieving motivation , the motivation of student is indicated by positive and realistic level of aspiration of

⁷ Suciati dkk, Teori Belajar dan motivasi, 2001, Proyek pengembangan UT Ditjen hal 56-57

student, students who has unrealistic aspiration is feel difficult in learning and student with realistic aspiration show the desire or motivation for learning, it can be said when student eager to do well and they has responsibility for their self, they will get best result of learning. The student motivation also define the actual target is too high or too low for them.⁸

Students with high eager to do well, it still faces the possibility of failed, because it is still accompanied by the possibility from failure.

According to Hj M. Hermans, the student who have a sense of great responsibility and eager to doing well, showed the following characteristics:

- 1) The tendency of introducing challenging learning tasks but not above the level of ability.
- 2) Desire to work and try to own, and find a solution to a problem in itself.
- 3) Strong desire to move forward and find a little success on stage to a standard that has been achieved before.
- 4) Orientation to the future; learning activities in view of the road leading to the realization of ideals.
- 5) Taxable on the basis of ownership of a friend's friend ability to complete the task of learning together, rather than on the basis of sympathy or a sense of excitement that hopefully friends.
- 6) Tenacity in the face hurdles despite learning

⁸ WS Winket Psikologi Pengajaran, 1987, Gramedia Jakarta hal 97-98

Based on Keller description Relevance phase are consist of:

- a) Help students understand their likelihood for success. If they feel they can't meet the objectives or that the cost (time or effort) is too high, their motivation will decrease.
- b) Provide objectives and prerequisites – Help students estimate the probability of success by presenting performance requirements and evaluation criteria. Ensure the learners are aware of performance requirements and evaluative criteria.
- c) Allow for success that is meaningful.
- d) Grow the Learners – Allow for small steps of growth during the learning process.
- e) Feedback – Provide feedback and support internal attributions for success.
- f) Learner Control – Learners should feel some degree of control over their learning and assessment. They should believe that their success is a direct result of the amount of effort they have put forth.⁹

To make relevance material in elementary school level may be using the study of learning step by HJM Herman that packaged in a book of WS Wuinkel, for support the process of learning, and make relevance of learning material the teacher should motivated student, the effort to motivate student are:

- (1) Explain to students why subjects included in the school curriculum and what is the use for the future life.

⁹ ibid

- (2) Remind the subject matter with students' experiences in outside of class as far as it was possible.
- (3) Show enthusiasm in teaching the subject that is held and the appropriate use of teaching procedures,
- (4) Encourage students to view learning in school as a task that should not be completely push the students to have the intention to learn and complete the mission as best as possible
- (5) Create a climate and atmosphere in the classroom according to the needs of students for possible future of the delusion is for students who tend to be afraid to fail so that there are students who need to be guided and accompanied.
- (6) Inform the test results in the shortest time possible and return the homework assignments that have been corrected.
- (7) Participate in extracurricular activities in order to enhance human relations with students.
- (8) Using the forms of competence among students with the student / groups of students to keep from competences is the reason for the mutual hostility.
- (9) Using incentives such as praise and gifts of material in a reasonable and not excessive. Similarly, punishment and censure should be provided when there is a reason strong enough.¹⁰

c. Confidence

¹⁰ Ibid hal 100

Confidence is important in learning process; student can give a suggestion and new idea without feeling nervous or afraid with the condition.

In order to raise critical awareness in the process of learning , learning process shouldn't get more control of teachers or just use Teacher's centered model, this model just produces more memorizer rather than ability of how to learn and eventually after students graduate can't do anything and they don't have capability in a society that plural heterogeneous and multi-issue.¹¹

d. Student Satisfaction

Satisfaction is positive feelings that can arise when people have a respect for their effort or work. These feelings can rise to positive feelings of self-esteem by evoking the spirit and motivate, the example to evoking learning spirit are:

- a. By Say "good," great, a "and give praise when students answer / ask questions.
- b. By positive verbal to response when the question / answered students by rising hand or bobbing his head.
- c. Praise and encouragement student with a smile and a sympathetic view of the participation of students.
- d. Provide guidance to students in order to give the correct answer.

¹¹ Mansour Fakihi, dkk, *Pendidikan Populer membangun kesadaran kritis*, 2001, Pustaka Pelajar, Yogya.

- e. Give simple directions so that the students gave the correct answer

To raise satisfaction on student the teacher should formulating step by develop four phases of Kolb's learning cycle as follows:

- 1) Converges; students who rely on abstract conceptualization and active experiments, they delighted to find concrete answers and move quickly to find a solution to their problems making decisions, not emotional love working with ideas.
- 2) Diverges; students using concrete experience and reflective experience to bring their good ideas in "barnstorming and make alternative and fun to interact with others".
- 3) Assimilators: happy students assimilate the information and reconstruct a variety of information and reconstruct the exact logic, good planning, developing theories, models.
- 4) Accommodator: students actively experimenting with the strategy of "trial and error" well-adjusted to the situation barn ¹²

To achieve improve motivation and get satisfaction the teacher should do this step:

- a) Learning must be rewarding or satisfying in some way, whether it is from a sense of achievement, praise from a higher-up, or more entertainment.

¹² Hisyam Zaim dkk, *Desain Pembelajaran di PT. 2002*, CTSD IAIN, Yogya, page, 125

- b) Make the learner feel as though the skill is useful or beneficial by providing opportunities to use newly acquired knowledge in a real setting.
- c) Provide feedback and reinforcement. When learners appreciate the results, they will be motivated to learn. Satisfaction is based upon motivation, which can be intrinsic or extrinsic.
- d) Do not patronize the learner by over-rewarding easy tasks.¹³

C. Motivation

Student learning motivation is come from desire of their self, however the motivation encouraged by external factor. In this case teacher has crucial role as external factor in encouraging learning motivation of the students. By giving stimulus which involve students body and their five sense such as question, song, or game, the learning motivation of students can be encouraged.

Many aspects that give impact of student motivation are:

1. The ideals or aspirations of students,

The desire has been there since childhood, such as the desire to eat, walk, and play. The desire is met will cause the will. In the process of learning, reward and punishment will be a desire to change the will, and then the strong will be turned into goals. Ideals and aspirations of

¹³ ibid

students will affect their motivation, students who share our goals will be motivated to make every effort to achieve his goals.

2. The ability of students,

Ability also affects the growth of student motivation in them. If students feel capable and have the results in an attempt to feel he will continue to be motivated to maintain and improve the learning results he obtained. Similarly, if he feels or does not have the ability to get results that are not in accordance with his wishes, he will continue to try and keep motivated to improve his abilities.

3. The condition of students,

Students condition include physical and mental condition affects the motivation to learn. A student who is sick, hungry or angry will distract the attention of learning. Instead students are happy, satisfied, healthy and motivated will be easy.

4. Environmental conditions of students.

Students of the natural state of the environment, neighborhood, classroom, peer interaction and community life. As a member of the community, students will be affected by the surrounding environment. Natural disasters, slum dwellings, the threat of a rogue friend would interfere with the seriousness of learning. Therefore, the condition of a

healthy school environment, harmony, social order will improve morale and motivation of students.¹⁴

D. Learning media

1. Definition of Multimedia

In etymologically multimedia derived from the word “*multi*”, In the Latin language is “*nouns*” which means with much, variously, and also it can from a “*medium*” word (Latin Language) which means something that is used for conveying or carrying something. The word medium in American Heritage Dictionary also refers to the tools to distribute and present the information.

Some definitions of multimedia according to experts are:

- a. combines of at least two media input or output. The shape of this media is audio (sound, music), animation, video, text, charts and pictures.
- b. Instrument that can create dynamic presentation and interactive which combine with text, charts, animation, audio.
- c. Multimedia in the context of computer. Hofstetter suggested that: “the utilization of the computer to create and combine text, graphics, audio, video, using a tool that allows users to interact, create, and communicate.

¹⁴ Dimiyati dan Mudjiono, *Belajar dan Pembelajaran* Jakarta: Rineka Cipta 2006 hlm. 99

- d. Multimedia as a interrelation of text, graphics, sound, animation, and video to convey messages to the public.
- e. Multimedia is a combination of text, data, images, audio, video, animation and interaction; and
- f. Multimedia (as an adjective) is the electronic media to store and display the multimedia data. Definition of media

The word media comes from the Latin *medius*, which literally means “middle”, “intermediate”, or “introduction”. In Arabic, the media is the intermediary or introductory messages from the sender to receiver of the message. Gerlach and Elly said that if the media understood in outline is the human, material, or events that establish the conditions which enable the pupils to acquire knowledge, skills or attitudes.

Media is a tool of teaching and learning process to conveyed the material. Types of media are :

- 1) Visual : graphs, diagrams, charts, charts, posters, cartoons, comics.
- 2) Audio media: radio, tape recorders.
- 3) Audio visual: television, video etc.¹⁵

2. Multimedia for Learning Process

Multimedia is a combination of text, graphics, sound, animation and video to convey a message to the public

¹⁵ Azhar arsyad, media pengajaran (Jakarta : PT grafindo persada, 1996) P. 15

interactive multimedia is multimedia that is equipped with a controller that can be operated by the user, so users can choose what is preferred for further processing.¹⁶

In this research, the researcher use macromedia flash playersimulation , wonder share quiz creator and video.

Based on the opinions it can be concluded that multimedia is a combination of various media (file format) in the form of text, images (vector or bitmap), graphics, sound, animation, video, interaction, etc. that have been packaged into a digital file (computerized and now termed Flash media), is used to convey messages to the public. Utilization of multimedia in learning as a media for learning such as: learning media, games, movies, medical, military, business, design, architecture, sports, hobby, advertising/promotions, etc.

3. Characteristics of Multimedia

Interactive Multimedia comes from macromedia flash or flash media that is considered to be closely related to the software to create animation that is usually used for various purposes on the internet. For example, to create a site, banner, advertisement, an animated logo, as well as other complementary animation.¹⁷

Related to multimedia, characteristics in generally be known with these traits when the users get leeway in controlling the multimedia,

¹⁶ Daryanto, loc.cit.

¹⁷ <http://www.total.or.id/info.php?kk=Macromedia%20Flash>. Accessed on 5 February 2013 at 09.10

then this is called interactive multimedia.¹⁸ Thorn propose six criteria to evaluate interactive multimedia, namely:

- (a) the first Criterion is the ease of navigation
- (b) the second Criteria is the content of cognition
- (c) the third criterion is the presentation of information
- (d) the fourth Criterion is the integration of media
- (e) fifth Criterion was artistic and aesthetic
- (f) the last appraisal Criterion is a function in its entirety.

So we can conclude that interactive multimedia is merging and synergy all the media consists of: a) text; b) graphs; c) audio; and d) interactivity.

4. Advantages of Interactive Multimedia

Related to the usefulness of learning media, especially interactive multimedia that is visual. Levie suggested that “four advantages of visual learning media, namely: (a) gained functions, (b) affective functions, (c) cognitive function and (d) compensators function”. The explanation is as follows:¹⁹

- 1) Gained function in visual media is exciting and direct attention to students to concentration to the contents of subjects with visuals or accompanying text subject matter. Thus, possible to obtain and remember the lessons bigger.

¹⁸ <http://www.multimedia.com/>. Accessed on 5 February 2013 at 09 25

¹⁹ http://id.wikipedia.org/wiki/Adobe_Flash. Accessed on 5 February 2013at 09.30

- 2) Affective function in media visual can be seen from the enjoyment students when learning or reading text pictorial. Picture or heraldry visual can inspire emotion and attitude students.
- 3) Cognitive function in media visual can make the students easy to understand and remember the information or message contained in a picture.
- 4) Compensators function makes it easy for students who are weak results in organizes his reading text and remember it again. That is very helpful a weak students receive a message with text or verbal. In other hand there are some advantages in using of flash media is:
 - a) Helps teachers to convey information and valuable experience to the students from the new innovations in the software.²⁰
 - b) Could flourish the learning motivation of students because it is a new experience.²¹
 - c) As a solution to give a chance to the teacher to show a new experience as the learning process progresses.
 - d) To add the attention of students in learning.
 - e) Make a students interest in learning and save time learning because teachers are not too much explain the words.²²

5. Disadvantages of Interactive Multimedia

Disadvantages of Interactive Multimedia are:

²⁰ <http://www.macromedia.com/resources/education/k12>. Accessed on 23 February 2013 at 10.03

²¹ <http://www.macromedia.com/resources/education/k12> Barb.Bodley@chca-org, Elementary School. Accessed on 23 February 2013 at 10.30

²² Janet Bremer, High School Technology Teacher, Cincinnati Hills Christian Academy, Cincinnati, OH, Janet.Bremer@chca-oh.org. Accessed on 23 February 2013 at 11.05

- 1) Not all teachers can make multimedia interactive because technique of make multimedia is not easy.
- 2) The high Cost needed quite much because must be supported with many facilities.
- 3) Need a more time to make interactive multimedia.
- 4) Requiring special skill in application computer
- 5) Procuring and maintenance need high cost.

E. Simulation

Simulation is the imitation of the operation of a real-world process or system over time.²³ The act of simulating something first requires that a model be developed; this model represents the key characteristics or behaviors/functions of the selected physical or abstract system or process. The model represents the system itself, whereas the simulation represents the operation of the system over time.²⁴

Simulation is used in many contexts, such as simulation of technology for performance optimization, safety engineering, testing, training, education, and video games. Often, computer experiments are used to study simulation

²³ J. Banks, J. Carson, B. Nelson, D. Nicol (2001). *Discrete-Event System Simulation*. Prentice Hall. Page 3.

²⁴ <http://en.wikipedia.org/wiki/Simulation> accessed on June 2013 at 15.30

models. Simulation is also used with scientific modelling of natural systems or human systems to gain insight into their functioning.²⁵

Simulation can be used to show the eventual real effects of alternative conditions and courses of action. Simulation is also used when the real system cannot be engaged, because it may not be accessible, or it may be dangerous or unacceptable to engage, or it is being designed but not yet built, or it may simply not exist.²⁶

1. Simulation in education and training

Simulation is extensively used for educational purposes. It is frequently used by way of adaptive hypermedia.

Simulation is often used in the training of civilian and military personnel. This usually occurs when it is prohibitively expensive or simply too dangerous to allow trainees to use the real equipment in the real world. In such situations they will spend time learning valuable lessons in a "safe" virtual environment yet living a lifelike experience (or at least it is the goal). Often the convenience is to permit mistakes during training for a safety-critical system. For example, in simSchool, teachers practice classroom management and teaching techniques on simulated students, which avoids

²⁵ Sokolowski, J.A., Banks, C.M. (2009). *Principles of Modeling and Simulation*. Hoboken, NJ: Wiley. Page 6

²⁶ *ibid*

"learning on the job" that can damage real students. There is a distinction, though, between simulations used for training and Instructional simulation.²⁷



²⁷ <http://en.wikipedia.org/wiki/Simulation> accessed on June 2013 at 16.00

CHAPTER III

RESEARCH METHOD

1. Qualitative research method

a. The Research approach

The purposes of this research are describe and study the problems the implementation of ARCS(attention, relevance, confidence, and satisfaction) strategy trough multimedia and simulation to improve student motivation on science 5th grade at MI Al-Fattah Malang.

The researcher uses qualitative research approach in order to reach the purpose. Qualitative research is a research used to examine the condition of natural object. The researcher is the key instrument, technical to collect the data use triangulation, the characteristic of data analysis is inductive, and the result of the research press on the meaning not on the generalization.¹The character of this research is descriptive. The describing is done after get the data about Implementation of ARCS (attention, relevance ,confidence ,and satisfaction)Strategy trough multimedia and simulation card at MI Al-Fattah Malang. The researcher wants to observes, analyzes the only indications in a system to understand the problems researched, then complete and detail.

¹ Sugiyono, Metode Penelitian Kuantitati, Kualitatif dan R&D, Alfabeta, hlm.9

b. Presence of the researcher

That is characteristic of a qualitative research that the researcher acts as an instrument and collector of the data ².

Because of that, presence of the researcher is obligatory. The researcher as an main instrument enter to the research setting in order to get direct connect with the informant and understands the facts in setting of the research naturally.

The researcher has to able to adapts and make good relation with the informants. The good relation will make easy for the researcher as long as collect the data. The researcher must be careful, so the researcher does not create a bad impression for the informants. Presence of the researcher is also known by the informants.

To understand the location, the researcher starts it with send a permission letter to the headmaster of MI Al-Fattah, Malang. In May 16th, 2012 the researcher ask the permission to the vice headmaster of curriculum field. In May 19th, 2012 the researcher gets the permission and directly starts the pre research.

There are some actions done by the researcher during in setting of the pre research, they are:

² Wahidmurni, Cara Mudah Menulis Proposal Peneliitian Lapangan, UM Press, 2008, hlm.1

1. Consult with the headmaster of MI Al-Fattah, Malang. That is to convey the intention and purpose of the pre research.
2. Gets the permission recommendation from the headmaster to do pre research in the school
3. Interview to the informant. They are science (IPA) teacher and. They are as a data source, the researcher will gets data as much as possible and focuses on the problem of the pre research.
4. Observes in class when the integrated social science learning is going on.
5. Chose the method based on problems that have observed before.

c. Research site

This research done in Malang, on 5th grade students In MI Al-Fattah and the research location at JL. Candi Telaga Wangi No.39, Mojolangu, Lowokwaru, Malang. The researcher reason select this school for Research place are :Because this school near with researcher house so it easier for me to do the research,this school was get the highest score in UASBN or national examination in 2009,there is difference and unbalance score between student, some student get high score and the other just get enough score. This research is customized with Science subject in 5th grade that become object of this research.

d. Data and data source

Collected data in this research are data appropriate with research question; it is the implementation of integrated natural science instruction. The data in this research such as words, act of the informants, documents, photos and record of the interview. The data and the data sources of this research can be look in the table below:

NO.	Data	Data Sources
1.	The design of learning process	Document: 1. syllabus 2. the design of learning application (RPP) 3. the curriculum structure
2	The implementation of learning Process	1. The interaction between teacher and students 2. The interaction between the student and learn sources both of them are primer data gotten from pass through the observation. 3. Multimedia in class the secondary data is gotten from pass through the

		documentation
		4. The informant Interview the teacher and the student

Table 3.1 Data and Data Source

The researcher look for data from the informants, they are peoples who know and understand about the implementation of integrated social science instruction in MI Al-Fattah, Malang. In this research, the researcher use *random question and comparison* to determine the informants. After the researcher knows the key informant, then the key informant determines the other informants who know about that research question. The key informant in this research is vice headmaster of MI Al-Fattah, Malang. The other informants are teacher and students. Look at this following table:

No.	Informant	Position	Quality
1.	Abdul Halim. M.Ag	Headmaster	1
2.	Indah Sulistyaningtyas	Science teacher	1
3.	Students of 5 th grade	Students	38

Table 3.2 The key Informant of research

e. Data Collection Strategies

Data collection strategies is one of important thing for a research so that the obtained data actually match with a

predetermined title. As expressed by prof. Dr. Sugiono that in terms of how or techniques of data collection, the techniques of data collection can be done by observation (observation), interview (interview), a questionnaire (questionnaire), documentation and combination of them.³

Based on this, so that the results obtained in the research This is really accurate data and accountable, then data collection procedures that researchers use in this study is as follows:

1. Observation

The process of observation is a depend on systematic recording of phenomena are investigated. Researchers conducted a early observations in MI Al-Fattah 5th grade to find out the problems appear in the class. The next observation is done by noting developments occurring after the action.

Methods of observation done as an effort to collect data. Besides the observation can be interpreted as recording systematic investigated phenomena. Three essential phases in the observe the class is planning a meeting, classroom observation, and trackbacks discussion⁴.

Also in this study, researchers used three phases in the observed classes, namely:

³ Sugiono, *Memahami Penelitian Kualitatif* (Bandung: CV. Alfabeta, 2005), hlm. 62-63

⁴ Rochiati Wiriaatmadja, *Metode Penelitian Tindakan Kelas* (Bandung: Remaja Rosdakarya, 2007), hal. 64.

a. Phase of the planning meeting

In planning the meeting, researchers presented and discuss lesson plans with the the science teacher, about how the presentation of the learning step is and analyze the problem as an effort to improve the learning that has been done before.

b. Classroom observation

Classroom observation carried out to see how far use the instructional media in improving students' motivation⁵thgrade. This is done in an objective method of teaching and learning activities by researchers.

c. Trackbacks discussion

Based on class observation of researchers conducted a feedback discussion with the participants. This discussion is based on observations or classroom observation. Where researchers and participator search disadvantages and advantages to be used as field notes and discussed next steps.

2. Method of Interview

The interview is a conversation with a purpose. the conversation conducted by the two parties, the interviewer asking questions and collect the data and the informant give answers to that question.⁵

In the step of research the interview is divided as follows:

⁵ Lexy Moleong, *Metodologi Penelitian Kualitatif* (Bandung: PT. Remaja Rosdakarya, 2002), hlm. 135

- a. Free interview, where the interviewer is free to ask any related to the research conducted.
- b. Guided interviews, the interviews conducted in which interviewer brings a series of questions are complete and detailed.
- c. Free guided interviews, the combination of free interviews and guided interview.

This study uses a free guided interview, in which researchers took a series of questions to the informant and asked matters relating to research, informants in this study is the guardian class, teacher subject areas, students in 5th and the people who associated with research that can provide information.

3. Method of Documentation

Method of documentation is to find data about the things or variables in the form of notes, transcripts, books, newspapers, magazines, inscriptions, meeting minutes, meeting, agenda, and etc.⁶

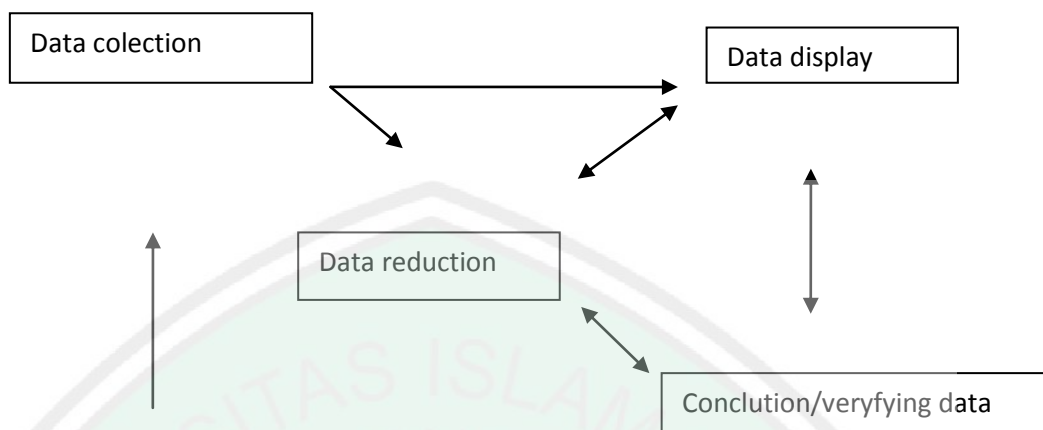
F. Data Analysis

The researcher uses Miles and Huberman model data analysis in this research. Miles and Huberman (1984) said that the activities in qualitative data analysis were done interactively continually⁷. The activities in this data analysis are data reduction, data display and conclusion/ drawing/ verification.

The steps of analysis are showed in this draft below:

⁶ Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktik* (Jakarta: Rineka Cipta), hlm. 231.

⁷ Sugiyono, 246



Picture 3.3 : Components of data analysis (interactive model)

Reducing the data is enclose, choose the main things and focus on the important things. The data reduction is done continually in this qualitative research. The researcher collects the data from observation, interview and documentation. The entering data is grouped based on the research question. Every data gotten from the field is given code according to the kinds of data.

Start from the early data collecting; the researcher starts look for the meaning of an event and write the causality of the event. Then, the researcher makes a temporary conclusion. The end conclusion is taken after data collecting and depends on the field notes and coding.

f. Checking of the data validity

The validity of data will be very important for the researcher to study the research finding position toward the before

theories and findings, interpretation and explanation from the findings or theories expressed from the field⁸.

The researcher uses some technical to keeps the validity of the research result. They are triangulation and focus group discussion, and also product moment formula to validate correlation between student motivation and Test result.

The researcher use Product moment formula to check correlation between student motivation and student learning result, the formula is described below :

$$R = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\{n\sum x^2 - (\sum x)^2\} \{n\sum y^2 - (\sum y)^2\}}}$$

N = amount of data X and Y

$\sum x$ = Amount of Variable X

$\sum y$ = Amount of Variable Y

$\sum x^2$ = Quadrat from total of Variable X

$\sum y^2$ = Quadrat from total of Variable Y

$\sum xy$ = Multiplication of Total Variable X and Variable Y

the researcher collect the data from questioner and student result of test result of data is measured by -1,00 until 1,00,if $R > 0.60$ the checking data is valid,and there is relation between student motivation and the student learning result.

1. Triangulation

⁸ Wahidmurni, 46

Triangulation in this checking data validity is meant as a data checking from some sources, was and time. In this research, the process of triangulation application uses source triangulation. Source triangulation is done by checking the data from some source for test the data validity. Example in this research, the different data from the students ,the teachers, and vice principal of curriculum field are described, categorized and specified. The researcher also identifies the different opinion from the students and the teacher. Then the researcher makes a conclusion and asks an agreement for the sources.

2. Focus group discussion

In this research, the researcher considers the adviser and the lecturer as expert. The researcher will discuss about these with them and the social science teacher in MI Al-Fattah, Malang.

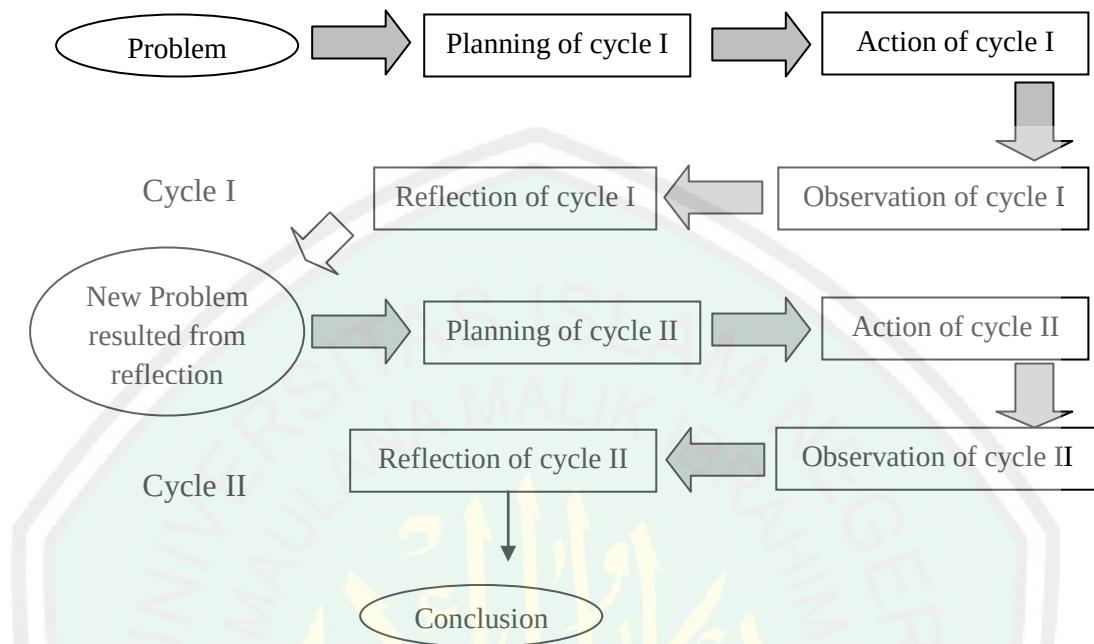
6. The Phase of Research

In this research the researcher uses two cycles. Cycles I and II for each cycle consist of two meeting.

There were four main activities in every cycle, they are:

- (a) Planning
- (b) action
- (c) Observation
- (d) reflection.

The description of cycles I and II can be drawn bellow :



Picture 3.4 the phase of research

1. Cycle I

a. Problem identification

The researcher identifies the problem of science teaching conformed by the teacher by doing interview and collecting documentation with the science teacher in five grades.

b. Checking the field

The researcher observes the existing problem during the process of teaching and learning process.

c. Planning of cycle I

In planning the action, the researcher also designing the teaching and learning in lesson plan form, also making action planning, and evaluation.

d. Action of cycle I

Action is implemented in fourth grade in accordance with the planning in lesson plan which arranged before. During the implementation, the researcher ruled as a teacher and observer who notice the improvement during teaching and learning process.

e. Observation of cycle I

Observation is done within the implementation of action is taking place. In this case, it is the process of teaching and learning. The observer uses observation guidance during the process and notices all of phenomena to collect data.

f. Reflection of cycle I

Reflection is done to see the temporary result of action, the cycle is done if the problem of student solved at least 75% of student able to answer question and complete the task at least 70%. , the minimum

g. Revision

The result of cycle I is used as the foundation to make revision of the next planning. Revision can be done based on the observation and reflection in cycle I to avoid the repetition of mistake and the weakness of cycle I. if we found new problem in cycle I or the target not reached we should do the cycle 2

2. Cycle II

a. Planning of cycle II

After knowing the improvement and making the revision of planning, the researcher makes the new continuous lesson plan in accordance with the reflection and revision of planning in the cycle I.

b. Action of cycle II

The implementation of action is done in accordance with the new planning which formulated before so that get optimal result in accordance with the goal.

c. Observation of cycle II

In this process, the researcher observes and notice again toward the condition of class to know the improvement of cycle I and cycle II. It should be observed well because this is the last observation and data collection of the research.

d. Reflection of cycle II

The researcher notices the result of observation and discuss with the teacher to know the result of action that implemented toward the students in the class. The researcher reflects and concludes the result of cycle I and II so that can be known that the motivation and conceptual ability are encouraged.

Chapter VI : The closing which contains the conclusion and suggestion of the research.

CHAPTER IV

RESEARCH FINDINGS

A. Description of the research

1. Description of school condition

Madrasah Ibtidaiyah AL-Fattah Malang is The Islamic Elementary school on Malang . Madrasah Ibtidaiyah Al-Fattah present for the community of Malang in accordance with the community needs to provide a quality education and affordable based on religion.

The descriptions of schools condition are listed below:

1. **Name of Madrasah** : MI AL-FATTAH
2. **Address**
 - a) **location** : JL. CANDI TELAGAWANGI NO.39
MOJOLANGU
 - b) **Distric** : LOWOKWARU
 - c) **City** : MALANG
3. **Name of Head master** : ABD. HALIM, M.Ag
4. **SK Number** : Depag No. WM 06.02 /7.296 /A/Ket./1991
Tanggal, 13 April 1991
5. **Point of acreditation** : A (very good)
6. **Status** : Foundation asset
 - a. **Land certificate** : BPN Certificate No. 4731 Th2004.
 - b. **Land size** : 990 m²
7. **Mount of Student Data** : 223 student

Class	Female	Male	Total
1	24	23	47
2	25	28	53

3	16	16	32
4	10	10	20
5	23	15	38
6	16	17	33
Total	114	109	223

Table 4.1 The data of Student Amount at MI Al-Fattah

8. Mount of class Data : 8 classroom (owned)
: 0 classroom (borow.....)
9. Total of learning participance (class) : 8 learning participance

No	Teacher status	Teacher degree							Tot
		Total S-2	Total S-1	Total D-3	Total D-2	Total D-1	Total SLT A	Total SD	
1	Departement teacher	-	7	-	1	-	1	-	9
2	Non departement teacher	-	-	-	-	-	1	-	1
3	PNS	1	1	-	1	-	-	-	3
4	Accountant	-	1	-	-	-	-	-	1
5	Staff	-	-	-	-	-	1	-	1
6	Cleaning service	-	-	-	-	-	-	1	1
Totalah/Total									16

Table 4.2 The Data of Teacher at MI Al-Fattah Malang

10. Teacher : 13 people, the ratio between teacher and Student are 1:17
11. Staff of administration : 1 people
12. Staff of unit : 1 people
13. Cleaning service : 1 people
14. Time Allocation of study : 6 days in a week
15. Resource of Funding : a. SPP
b. Donator

c. BOS

13. Asset of Madrasah Ibtidaiyah Al-Fattah

No	BUILDING	Total	SIZE (m2)	Status	DESCRIPTION
1	Classroom	8	19,5	Owned	5
2	Laboratory	1	19,5	Owned	New
3	Library	1	4	-	At the same room with class 3
4	Computer lab	1	4	-	At the same room with UKS
5	Art gallery	-	-	-	-
6	Art workshop	1	12		Good condition
7	Musholla/ mosque	1	45	Owned	Good condition
8	Restroom	1	2	Owned	Good condition
No	Building/Room	Total	Luas (m2)	Status	Ket
9	Student Restroom	3	1,5	Owned	Good condition
10	Teacher office	1	32,5	Owned	Good condition
11	Head Master office	1	12,5	Owned	Good condition
12	Lounge	-	12,5		Good condition
13	Medical room	1	3	Owned	Need repairmen/at the same room with student counseling room.
14	BP/BK room	-	3	-	Need repairmen /at the same room with medical room

Table 4.3 The data of facility at MI Al-Fattah Malang

2. Vision Mission and Goal of madrasah

a. Vision

Build Islamic Generation with excellent quality also the Generation who has Iman and taqwa, and has synergy with Science and Technology.

b. Mission:

1. Produce graduates that have solid faith to devotion for Allah also have good attitude (akhlakul karimah) and have good achievement in learning.
2. organizes the creative learning, innovative and insightful technology
3. create environment and human resources as a source of Islamic learning
4. developed the potential of students based on level intelligence, interest and talent so has life skills(Islamic live skill)
5. Accustom to live cleanly, healthy, and attractive look to create good condition.
6. Create conducive work climate and ethos of work hard, as well as human resources adaptive and competitive
7. Build an image of Madrasah as a trusted partner of community in the fields of education and dakwah.

c. Goal of Madrasah: Create the foundations of intelligence (intellectual, emotional and spiritual), personality and noble character, knowledge and skills for independent living and following a further education.

2. Description of class V as research Place

Class action research was conducted in class V, which in this class consist of 38 students, and this data include the result of evaluation in every step of research, as for the number of grade V are as follows:

No	Student Number	NISN	Name	Score		
				Pre test	Cycle I	Cycle II
1	1159	0015498584	Abdillah Kurniawan	60	80	100
2	1160	0015498581	Agung Setyono	50	70	100
3	1161	0021578845	Ahmad Fauzan Rohmani	50	70	100
4	1212	0021497015	Ainul Mahbubi	50	70	90
5	1163	0021578837	Ariesta Kurnia Putri	30	60	100
6	1191	0015498589	Avilia Rohmita	40	70	100
7	1272	0012103864	Dinda Ayu Novitasari	40	60	100
8	1189	0015498588	Fitrotul Isnaini	50	70	100
9	1164	0021578838	Gading Renandra Putra Koli	60	70	90
10	1165	0021578851	Imadul Ummah	50	60	90
11	1168	0015498583	Iqbal Burhanuddin	50	60	90
12	1166	0021578836	Ismail Juan Firmansyah	50	70	100
13	1275	0012953330	M. Ilham Aminullah	30	50	90
14	1170	0021578846	M. Syafnat Fu'any Al Arif	60	70	90
15	1171	0015498585	Mahfud Junaidi	60	70	90
16	1169	0015498582	Maulana Salman al Farizy	50	70	90
17	1277	0021255434	Miftahul Jannah	50	60	90
18	-	-	-			
19	1174	0021578842	Mochammad Misbahul Karim	50	70	90
20	1172	0021578844	Muhammad Syafiq Wafaa Fairuuzi	50	70	90
21	1173	0021578832	Muhammad Taufiq Hidayatullah	50	70	100
22	1175	0021578843	Nadia Fauziyah Nashih	50	70	100

23	1176	0021578847	Nissa Mariana	60	80	100
24	1153	0015539168	Rafly Firmansyah	60	70	100
25	1178	0015498591	Rahmadani Yuda Prawira	60	80	100
26	1177	0015498592	Ramadha Pasa Jaya Nur Cahya	30	70	90
27	1194	0021578849	Rayhan Syarif El-Wafie	60	70	80
28	1179	0021578835	Ria Febrianty	60	80	90
29	1181	0021578848	Rian Bayu Angga	50	70	90
30	1180	0015498587	Rieke Novianti	50	70	90
31	1276	0001329721	Rinda Dwi Maulana	50	70	90
32	1182	0021578850	Rokhmatul Ummah	50	70	90
33	1155	0015539181	Safira Rizka Amalia	50	80	100
34	1183	0015498590	Sheva Hildan Ramadhan	50	70	90
35	1184	0021578834	Tristanaldo Kusuma Mahardika	50	70	90
36	1186	0021578840	Vita Aprilliana	50	70	90
37	1187	0021578839	Yazh Johar Haptama	50	70	100
38	1188	0021578852	Yuanda Putri Rizki Ramadhani	50	70	100
39	1202	9992042420	Yuangga Eko Prasetyo	50		90

Table 4.4 the Data of student and the test result

This data has taken from MI Al-Fattah Malang 2012-2013

Natural science given lessons twice a week on tuesday at 11: 30 - 12.45 wib and on friday at 07.30 -08.40 wib. And the science teacher of 5th grade is Mrs. Indah Sulistyowaty , S. Pd.

3. Research description

a. Pre research

On May 23rd, 2012 the researcher conduct the first observation on MI Al-Fattah Malang, the purpose of the research is identify the problem of student of learning natural science. The fact that was researcher found in learning process are: student

bored with the material, sometime student fell confused with new word or science, and some of them unable to imagine the science process in real life.

The data above are supported with the interview of some student after learning process of natural science ,as a sample the researcher choose one female and male students as respondent ,they are Avilia and Hidayatullah :

Researcher : “bagaimana pelajaran IPAnya ?”(How do you feel when you learning science?)

Avilia : “agak capek soalnya belajar dari tadi pagi.”(I Feel so tired,because I get a lesson form morning ago.

Researcher :”apakah pelajaranya menyenangkan?”(Do you Feel happy in learning?)

Avilia : “iya,tapi agak bosan karena banyak tugas di lks”(yes,but Iam bored,because the teacher give so many task in work sheet.

Researcher: “apa kesulitan kamu dalam belajar ipa?”(Do You find difficulty in learning science?)

Avilia : “kesulitanya ya..kadang malas baca kalau sudah capek,lksnya juga banyak tugasnya”
Sometimes Iam lazy to learn when I feel tired,also I got so many task.

Researcher :”Kalau Taufiq gimana tadi belajarnya?
And you Taufiq,How about the learning
Today?

Taufiq : Ya..sama seperti teman-teman,capek.
I feel same with the others,Iam tired.

Researcher :tadi masi ingat atau tidak belajar apa tadi?

Do you remember what you learn today?

Taufiq : Belajar adaptasi hewan, terus... lupa sulit-sulit namanya.

(learning animal adaptation, and I forget the difficult term in science).

Researcher: kalau kesulitannya di pelajaran Ipa apa saja?

(and how about your difficulty in learning science?)

Taufiq : sulit menghafalnya kadang suka lupa.

(it's difficult to memorize, and sometimes I forget the material)

Researcher : kalau tadi belajarnya capek gak?

Do you feel tired today?

Taufiq : iya soalnya tadi jam terakhir, kalau jam terakhir jadi Ngantukan.”

Yes because it's my last lesson today, so I become sleepy.¹

The result of the observation is student are less because the teacher still use lecturing method and just give student task from worksheet. in this case the student motivation are less.

After observed learning process, researchers discuss a problem with the teacher to get more data of learning problem and determine the material for research, as suggestion of the teacher of 5 grade, the researcher will conduct the pretest after getting permission from department and Head master of MI Al-Fattah on

¹ Result of interview with Taufiq Hidayatullah as the student of MI Al-fattah Malang in 5th Grade at 12.15, May 23rd 2013

17 November 2012, and then the research will be continue on 22 November 2012.

5. Planning action

The researcher conducting the process of learning by ARCS strategy and prepare the media and arrange learning activity like :

- a. Make an instrument sheet to measure student ability
- b. Prepare a media for learning like interactive multimedia (macromedia flash and video and picture) also some object for experiment (ice, candle, sugar, water, and glass).
- c. Make a design of teaching planning process
- d. Make question for pretest and post test
- e. Set the activity of experiment
- f. Make questionnaire for student
- g. Make the teacher evaluation sheet to evaluate learning process
- h. Make a worksheet for homework
- i. Make a task list for a student
- j. Preparing the evaluation result and reward for student.

B. The data explanation

The explanation of data is consisting of research process that researcher gotten after observed in pre research.

Before the researcher apply the ARCS strategy to improve student's motivation, the researcher held a pretest to examine student

learning result and measure the motivation of student based on the test result.

After getting the data result, then the data is used for comparison of research that apply the ARCS Strategy by using interactive multimedia and simulation.

1. Pretest

a. Design of pretest

Pretest is held before implement the strategy of ARCS, the aim of pretest is to measure the student early condition and get the data of basic knowledge on natural science. Beside held a test the researcher observe the student condition and student respond of the material, like the process of learning before the researcher use the same method as the teacher did before.

The process of pretest is divided into some step of learning they are:

- 1) Opening, in this step the teacher introduce the researcher and explain the purpose of learning material
- 2) Core activities, in the core activity the teacher use conventional method by explain the material, reading, and sometime give student feedback by question and continue with resume and student write the material.
- 3) Closing ,give a homework in worksheet and evaluate the student with question.

b. Action of pretest

Pretest was held on 13th November 2012 with conventional method. The indicator of pretest is explains the science material of “the changing process of object structure” Learning process of pretest use the same method as the teacher method before.

The teacher just explains the material and discuss with student about the material of science on book.

In explaining material the teacher read the material on a book and write the additional information on whiteboard while the student writing. Some of student don't listen the material, they prefer play and chat with the other than give attention to teacher explanation. Because some of them feel bored with the material.

When the teacher concludes the material, there is no one try to answer the question that the teacher given after makes a conclusion.

The teacher try to choose one of them but he just answer with reading the material on a book, some of them feel confused with the material and the student who seat on back is not giving attention to the teacher. The learning isn't conductive they really feel tired and some of them are lay their head on desk, as the condition before the student aren't interest with the material.

The condition of the student are described by the picture bellow.



Picture 4.1 of pretest condition on 13 November 2012

b. Observation and result of pretest

Pretest was held on 13 November 2012 with the conventional method .The indicator of the material is explaining “the changing process of object structure”. In pretest the teacher still use same method as the learning process before.

Based on the test result of pretest, student are not interesting with the material , they not feel enthusiasm and less spirit to know more about the explanation, because the teacher just explain the material with lecturing and use monotone question.

As a indicator of learning motivation is less is the result test is less or under the criteria of passing grade, the result of pretest :

No	Score	Frequentionation of	Status
----	-------	---------------------	--------

	Interval	student	
1	95-100	-	-
2	90-95	-	-
3	85-90	-	-
4	80-85	-	-
5	75-80	1	PASSED
6	70-75 (passing grade)	1	PASSED
7	65-70	8	FAILED
8	55-60	10	FAILED
9	50-55	6	FAILED
10	45-50	2	FAILED
11	40-45	9	FAILED
12	35-40	1	FAILED
13	00-35	1	FAILED
	TOTAL		RESULT
			PASSED
			2
			FAILED
			37

Table 4.5 Score of pretest Result

Based on the data above 37 student failed on pretest, this data indicate the student motivation is less, and less motivation give negative Impact for the student.

Most of student unable to understand the material because they confused with the material of “changing process of object structure”, they can’t imagine the process because they never

practice or observe the object directly, that's way the student not interest with the material and their motivation to learn is less.

To solve this problem the teacher should use interactive method, strategy, and media that able to make student interest and motivated student to learn. Because less of motivation can influence the students achievement in learning.

c. Reflection of pretest

The result of pretest indicated the motivation of student is less, and the method is not suitable with the material. Based on pretest result the students get difficulty in find differences between the changing process of object structure and the changing shape of the object.

Although the process is easy to find in daily life the student is still confused with the material because the method of learning is still use conventional method that make student feel bored in learning.

For the result pretest and the condition of the student that have observed on pretest, the teacher need more interactive method to motivated the student and to make easy the material the teacher should arrange activity based on student experiment that related with the material in daily life, and in this research the teacher also implementation the ARCS (attention, relevance,

confidence, and satisfaction) through multimedia and simulation to improve student motivation.

Multimedia will increase the student motivation in learning because with multimedia the student can learn material with ease and they feel real experience with attractive multimedia like watching video and playing multimedia flash.

Because the learning time is short, the teacher should use a simulation to show the next process that students need a long time to observe in experiment. The simulation also helps the student save a time in learning.

2. Cycle 1

Cycle 1 is conducted after reflecting the pretest result and get the data of the test. Before entering the cycle I, the researcher gives a test to check the student condition before the learning process, the first test is used for comparison between the condition before the implementation of ARCS and the condition after researcher implementation of the ARCS to improve student motivation. The implementation of the cycle I was held on 13 November 2012 at 5 grade classroom. This cycle is held in one meeting of study with two sessions, one session is about 35 minute time allocation for study.

a. Planning cycle 1

The first action before implemented the strategy on class is arrange a teaching planning based on ARCS (attention, relevance, confidence and satisfaction) strategy trough interactive multimedia and simulation to improve student motivation of the natural science subject in “the changing process of object structure” .

This strategy is start by attract student attention in learning material ,relevance material with the process in daily live ,make students confidence in discussion and help they to get satisfaction in learning material.

In planning cycle I the researcher makes some step of learning such as:

- a) Decide the learning activity with discussing the planning of cycle I with natural science teacher to decide best activity for student, it also determine activity and time allocation for study.
- b) Make a design of teaching planning process and discuss with natural science teacher, how to adapt the student with the strategy and how to conduct student on class.
- c) Prepare the media for experiment, the researcher decide to use experiment first because with doing experiment the student be able to feel real condition.
- d) Prepare a video and macromedia flash for simulation.

- e) Make a strategy to improving student motivation by explain unique fact of science, in this meeting the researcher use a trick with ice.

In planning the cycle I the researcher arrange strategy of ARCS that divide into 4 steps they are

- (1) Attention, the teacher attracts the student with unique fact of science.
- (2) Relevance, related material with daily live by using experiment.
- (3) Confidence, it makes group discussion and motivated the student to more confidence, and raise their confidence by presentation of discussion result.
- (4) Satisfaction, in this step the researcher gives a reward to each group by praise and gives a little gift.

b. Action of cycle I

1) Introduction

In this cycle the researcher collaborated with the teacher to prepare the learning process, make a strategy that implementation of ARCS and also decide science material of the changing process of object structure.

In attention step, the teacher attracts the student with some item like ice, glass, and dull steel.

In this step the teacher make student think what happen in this item, it also give stimuli to attract the student attention.

After get attention from student the teacher raise student confidence by give an easy question “why water can change into ice and become hard?” of course some of student able to answer because they ever learn the material before in 3rd grade.

After give easy question the teacher show a trick with ice that make student curious, when the teacher success performing a trick ,the teacher let the student do an experiment and make a deal with student the deal is “ if they learn seriously, the teacher give the secret of a trick”.

2) Core activity

The teacher divide the class into 5 groups each of group gets a worksheet and some item for experiment. When the student preparing the item the teacher show a flash simulation that same with the practice.



Picture 4.2 Cycle I When Student makes an experiment

Before start the activity the students get some explanation of the material and after get some explanation the teacher gives an instruction to do the experiment.

First the teacher give an instruction to put the ice on a glass, and choose one member to observe the process, the teacher give the next instruction to melt the sugar on water by stir with spoon, then burning a paper, observe the candle, and observe a steel and compare with dull steel. After the entire member gets an instruction, everyone should explain to their friend by practicing the other members are catechizing the result.

After all student have write the result the teacher show a simulation with macromedia flash, if the answer of the result wrong the teacher correct the process and motivated to find wrong phase and the lack of experiment.

After the student try to find the correct result of experiment, the teacher give instruction to the each group to explain the result of experiment, the other group should give a argument with the experiment.

The teacher show a video and simulation to compare with student result, all of student get a praise and attention to improve their motivation, all of the answer must get positive comment from the teacher after the teacher corrected the result.

After present the result of their experiment, the teacher ask for student to ungroup and back to their desk, to conduct the class the teacher do an ice breaking activity with student by moving their body with brain gym for refresh the condition and increase spirit and student motivation.

The teachers give conclusion of material and correct the miss conception of student.

The teacher give a student chance to ask question with the material, if the question is too much the teacher give a chance to the student write and sticking question on a paper and let their friend find the answer of the question, the teacher also help to answer the difficult question and selecting the suitable question based on material.

3) Close activity

In the close activity teacher ask some question about the material and give the student test again to measure improvement of student achievement , In the end of activity the teacher give a secret of the trick that showed before .

After the student satisfied with the explanation, the teacher motivated again the student by giving another amazing process of science, it will motivated them to get more amazing fact of science and read more to find the information of science.

After the lesson is over the researcher give the student questioner to measure students motivation, the researcher also completing the instrument after observe student motivation.

c. Observation of cycle I

The observation is started before the learning process until the end of learning process by implementation of ARCS method trough multimedia and simulation.

Before the learning process the student like sleepy, but when the teacher perform attention phase in ARCS strategy, the student look curious and more active in learning process.

Although some student curious in learning there are many student feel afraid to join and asking question, the teacher give solution by pointing them to answer the question and participate with the others and motivated them by praise them when they answer question and show the will of learning with the others.

As the description before the researcher collaborated with teacher in the learning process. The teacher and researcher work together to arrange strategy and learning process.

The concept of learning arranged base on the material, standard competence, and must suitable with the strategy of ARCS.

The researcher also collects the data in the learning process when the teacher explains the material and the student doing their activity.

The researcher collect the data of student activity, motivation to answer the question, curiosity, and the attention to the material based on researcher observation.

With the collaboration between teacher and researcher, the researcher can get accurate data of student that suitable with real condition in class.

d. Reflection of Cycle I

The reflection of cycle I is consist of many aspect of scoring based on indicator. the aim of this cycle is measure the improvement of student motivation after implementing the strategy of ARCS strategy, the motivation of student increased because of the attention, relevance, confidence and satisfaction step of ARCS it also supported by multimedia and simulation that make learning more active.

The motivation of students are measured by researcher on activity assessment paper that prepare before, the indicator contains of score 1 until 4, this score are described student level motivation based on observation of student activity.

The criteria of score are describe bellow:

1= less 2=enough 3=good 4= very good.

The researcher uses this formula to collect the data:

$$\frac{\text{Total of score obtained}}{\text{The number of student}} = \text{the result of score}$$

The result of motivation researcher observation based on cycle 1:

NO	Indicator	Total score	Average score
1	Enthusiasm in Material	560	71.79487%
2	Enthusiasm of following instruction	560	71.79487%
3	Spirit in learning	470	60.25641%
4	Motivation in exploring new idea	430	55.12821%
5	Competence and team work	540	69.23077%
6	Motivation to get the best score	485	62.17949%
Percentage			63.71795 %

Table 4.6 result of student motivation on cycle I

This data was counted by Microsoft excel program with the formulas

$$\frac{\text{Total score}}{\text{Total of questioner max score}} \times 100 = \text{student percentage}$$

According to the evaluation score of observation in cycle I we can compare the result of pretest 48,23 % with the last motivation improvement from cycle I with 63,72% .from this data the researcher

decide to next cycle, because the result of the test is not reach the target of researcher, the improvement at least reach 75 %.

for that result the researcher find a weakness and obstacle such as:

1. When doing experiment not all student take a part in activity
2. Some smart student more dominated in the group, and not let the other to be participant
3. The control of student is less because the teacher let them express their creativity freely.
4. There are 5 student didn't reach the standard of criteria
5. The time management not suitable and less control of activity make the material explain uncompleted.

With the implementation of ARCS strategy trough multimedia and simulation in the first cycle student motivation is increased great enough, but the learning strategy not improved all student.

Many students still shy and the learning just dominate by some student. The result of cycle I isn't passed the target, because the control of teacher and researcher are less and with less control many student become uncontrolled and difficult to conduct the class because of the mount of students is 37 person and time allocation is not enough.

The description of learning design and media are described on this table :

Learning step design and Media toward ARCS Models

No	Cycle 1	Attention	Relevance	Confidence	Satisfaction
1	Make a trick with ice and give amazing fact of science.	V	V	-	V
2	Teamwork and group discussion.	V	V	V	V
3	Experiment.	V	V	V	V
4	Macromedia flash simulation.	V	V	-	V
5	Activity card with reward	V	-	V	V

Table 4.7 Revision check of cycle I

After evaluated the result and obstacle of learning in cycle I ,the teacher and researcher set the next cycle of ARCS strategy trough multimedia and simulation, with modify the step of learning with the other activity which able to give stimulus to passive student and give the same chance for all student, with fix the weakness on the cycle before the

researcher find solution to solve all obstacle in cycle I and improve the motivation of students, because the cycle 1 able to raise the motivation the research will be continue by same method with different step that was modified after evaluating the cycle I.

e. Revision of cycle I

Based on result in reflection in this cycle need to fix and improve with the different step, and after evaluated the process of learning the researcher with the teacher arranged some step to improve student motivation. Some evaluated problem that researcher found in learning process and the revision of problem are described below:

1. Revision of time management in learning after find the problem of uncontrolled and mismanagement of learning that make some material not explained. Revision on this aspect include: give the time activity boundaries more precisely.
2. Revision of learning step, many students still confused with the teacher instruction and unable join the activity because the ability is lower than other active student, to fix this obstacle the teacher and researcher design an activity card for the student with the step of learning and student can check their ability by themselves.
3. Make an interactive quiz by using quiz creator and make a board for giving correct and wrong answer, this step is for fix the student problem in participate in learning, with this method all student are motivated to join the learning and compete with other.

4. Bring the reward to give stimulus on the student, the reward will be given on all of student who participate well in learning
5. Prepare and anticipate all things to handle the next cycle for fix the problem in the next cycle.
6. Give more attention and relevance by using video and flash simulation after the student have did experiment before in cycle I.

3. Cycle II

After evaluated and make revision in the cycle I the researcher and the teacher held the cycle II as the next cycle to improve student result in this research until reach the goal of research.

The implementation of this cycle was conducted on 23 November 2012 in the second meeting after the first meeting was held.

The time allocation of the science material that discuss the process of changing thing are two meeting consist of four hour learning time, at the second chance the researcher use same strategy of ARCS same with the meeting that was held before.

As comparison with the first cycle, in this meeting the researcher modify the activity of learning based on previous finding in cycle I.

a. Planning of cycle II

To accomplish the result of learning and motivation objective the researcher and teacher collaborated in prepare a

learning activity, media, and apply the strategy of ARCS in learning process.

The preparation of learning process is listed below:

- 1). Make a teaching planning process with accurate time allocation and controlled the activity with better time management
- 2). Modify and fix scenario of learning to improve the student participation.
- 3). Prepare the media and learning source by make a quiz and setting interactive activity for student compete.
- 4). Prepare the assessment sheet same as first cycle
- 5). Prepare questionnaire to measure motivation of student precisely.
- 6). Make a controlling card activity for the student.
- 7). Prepare a gift for a student

In this planning section the researcher not provide experiment activity to conduct the time.as substitute the researcher use macromedia flash simulation and video to show the process of thing change.

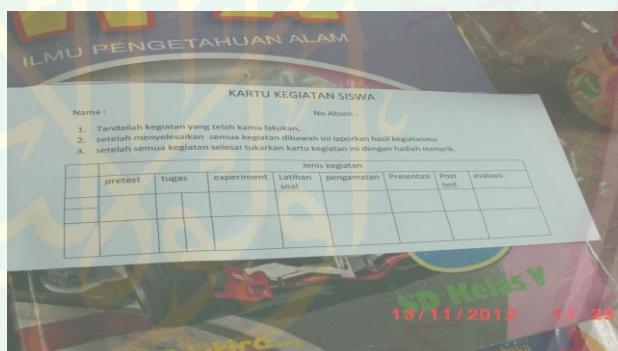
Interactive multimedia is improved to, because the students are more attractive by the several of media.

b. Action cycle II

1. Introduction

The implementation of cycle II was held on 24th November 2012 at 5th grade classroom. When opening the lesson the teacher give greeting, and asking student condition. Before discuss the material, helped by researcher, teacher give the student card of activity.

To remind the last material teacher ask the student to give an example the changing process of thing in their daily life. After all student answer, the teacher shows a video about permanent changing of thing and temporary changing of thing.



Picture 4.3 of Student Card Activities

After the student understood the material the teacher ask student to read the list activity of the card, there are many activity listed on this card such as:

1. Give a comment to picture on worksheet and make presentation with their argument.
2. Answer permanent or temporary on worksheet
3. Get 10 point in quiz session
4. Find example in daily life

5. And get at least 80 on examination

By using card of activity the student will enthusiasm in learning and not missed the teacher explanation about the material.

2. Core activity

After getting card of activity the student start with the first activity in the card.

The teacher guide the student to answer the worksheet, by showing the video related the picture, student commented on their paper. To raise motivation with confidence aspect in activity, teacher asks them randomly to present their pepper in front of their friend. The student who has presentation and not afraid to try get the checklist on their card.

The respond of student is good; most of them feel enthusiasm they compete with the other to get first chance presentation. The card of activity boosted motivation of the student because they encourage to finish all task and get good mark to achieve a reward.

The next task is answer permanent or temporary change process of a thing on a worksheet .Teacher give a short instruction to the student, by giving the next worksheet teacher make sure the ability to understanding material, in answering the worksheet the student just show sign (O) for correct answer and (X) for wrong answer.



Picture 4.4 Quiz Activity

The setting of this work sheet is designed to understanding material with easy step and the student not tired and lazy in writing.

Before entering the next session of learning based on third step in card, the teacher ask the student to motivate them with giving question “apa kalian masih semangat”?(do you feel spirit in learning?)when the student give the respond of question, the teacher tell to student that we will do fun activity like quiz.

To accomplish card activity requirement, the student must get 10 point in answering quiz that was described in student activity card.

Teacher give a board to answer the quiz, one question in first session has one score and at the last session of quiz the question has two points for each correct answer.

The quiz is continue until all of student get 10 point, the other student who has pass the score motivated their friend to answer without help to answer question.

The question of quiz is showed on LCD by using application wonder share quiz creator that has designed with

interactive question supported by music, video simulation and picture for student to make the student more interest. When they pass 10 point in quiz they look so happy, and motivated the other student to pass after him.

After get a sign to finish the quest on activity card, student give a example of thing changing process in daily life, they should find as much as they can to get sign in the card.

Teacher helps the student to review the material and discuss the difficult material. If the student doesn't understand the material, the student can discuss with their teacher.

3. Close activity

In the end of activity teacher give an examination to the student to measure the learning achievement, to avoid nervous on a student the teacher should explain that the examination is not same with the evaluation, after did some activity this exam will be easy for student.



Picture 4.5 Student feel satisfied after get the reward

After finish the exam the teacher correct student work result together and discuss the question, because some of question

same with test before most of student able to answer the question correctly and just need a few of minute. After checking the work student get a sign and they allowed change their card with their reward.

c. Observation of cycle II

The Implementation of ARCS (attention, Relevance, confidence, and Satisfaction) strategy with multimedia and simulation can improve student motivation also the student participation and with high motivation the student will get good score achievement in learning.

With using multimedia and simulation like video, macromedia flash, and quiz creator the student fell more enthusiasm it look for the courage and attention in learning material. These strategies also controlled by activity card that manage time of learning and make the student compete with other.

d. Reflection of cycle II

For the result in all cycle that has done, the researcher take a conclusion of Implementation of ARCS method trough multimedia and simulation to improve student motivation on 5th grade.

The result of cycle II are described on table below:

NO	Indicator	Total score	Average score
1	Enthusiasm with the material	746	98.333333%

2	Enthusiasm of following instruction	746	98.33333%
3	Spirit in learning	767	96.66667%
4	Motivation in exploring new idea	754	98.51282%
5	Competence and team work	756	98.82051%
6	Motivation to get the best score	724	98.33333%
Percentage			95.83333 %

Table 4.8 score motivation of cycle II

From the result of cycle II the data indicated student motivation increased. The increasing score from cycle I 63.72 % and cycle II about 95.83 %.

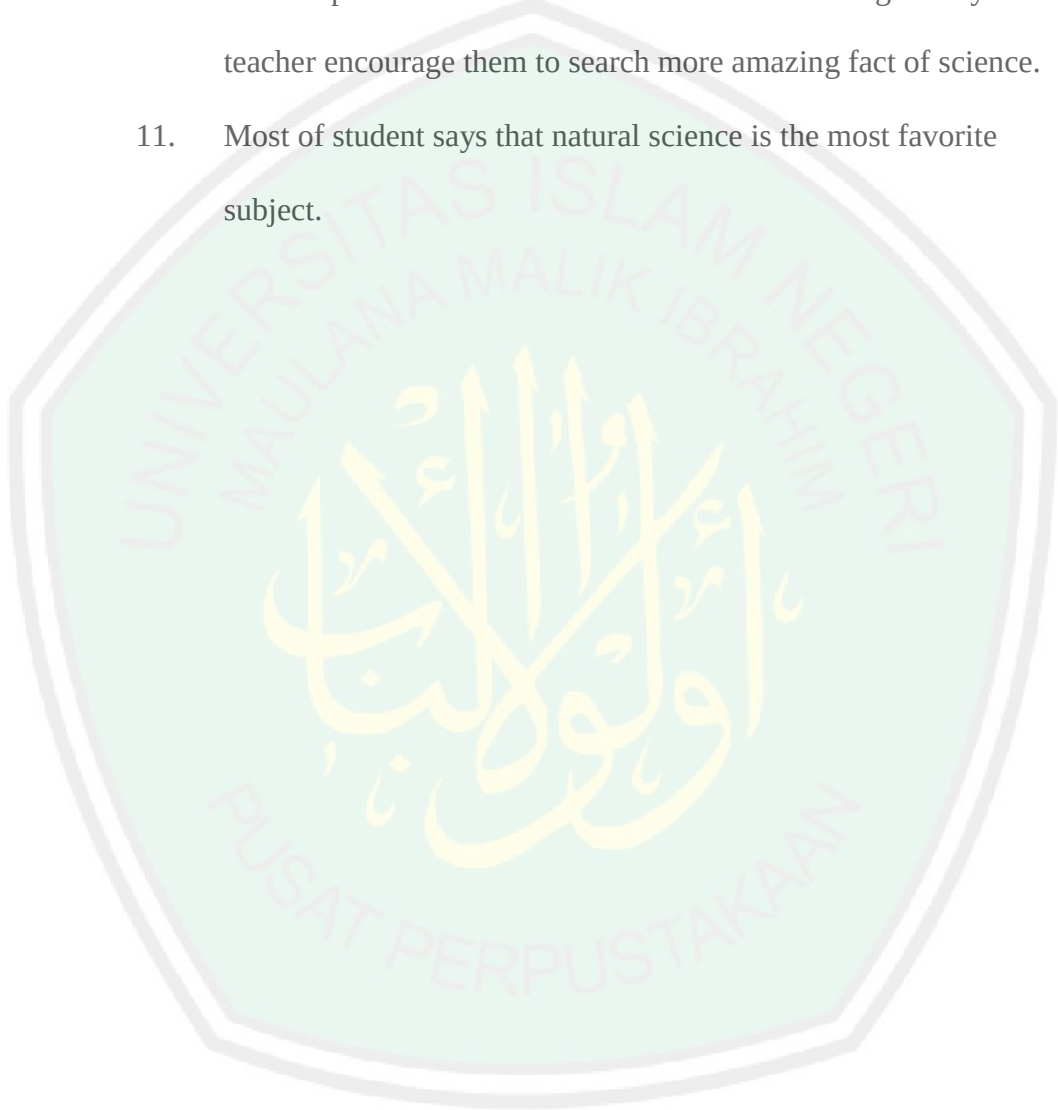
The score from cycle I until cycle II increase 32 % after evaluated the first cycle and modify and manage the activity the motivation of student are increased. The score of cycle II is passed objective of research by getting score more than 75%and the result is better than the cycle I with the score 95,83%.this data also validate by Pearson formula on Microsoft excel and the result $(R) = 0,71$ and $R = 0,61$ in cycle II, the

Result (R) more than 0,60, it indicate that the result of this result is valid and there is relation between student motivation and the learning result.

Based on data on cycle II, we can take a conclusion that The Implementation of ARCS(attention, relevance, confidence, and satisfaction) strategy can improve the student motivation, and this strategy have indicator of success that has passed successfully. The indicator of this strategy has success when we implemented in learning are:

1. Motivation of student increased 98,83% after implemented this strategy
2. Student more attractive and they have more spirit to get high grade
3. Student become more curious and addicted to learn science
4. Most of student get good mark in a lesson, they get 80 as minimum score with passing grade 78 it indicated the material are interactive for student and suitable with they want to learn.
5. The participation of student increased, they become not afraid, competes to raise their hand for ask and answering question it also indicated student motivation increase.
6. Student show enthusiasm in learning, the look so happy and not fell bored in learning process
7. The student collect the task on time and not burdened by the task.
8. Most of student able to answer the question of teacher and presentation their work with brave and pride.

9. Student always remembers the material and applies the experiment in their daily live activity.
10. Some aspect of material and the attention that was given by the teacher encourage them to search more amazing fact of science.
11. Most of student says that natural science is the most favorite subject.



CHAPTER V

DISCUSSION

The focus on this research is the effort to improve learning motivation on student by implementing ARCS (attention, Relevance, Confidence, and satisfaction) strategy through multimedia and simulation.

Learning motivation determine the result of learning achievement. If the motivation that gives to student properly, it can make the learning process more successful. Further the motivation always determines intensity of student learning effort.¹

Based on pretest result student problem is less in motivation, then on the cycle I researcher applied ARCS (attention Relevance strategy through multimedia and simulation. The Implementation of ARCS learning strategy supported by multimedia and simulation, researcher able to improve student motivation in learning science.

Learning motivation on natural science 5th grade at MI al-Fattah Malang can be grouped into intrinsic and extrinsic motivation. Intrinsic motivation is come for student awareness, intrinsic motivation also have impact to the student habit that related with student achievement in learning.

¹ Sardiman A.M, *Interaksi dan Motivasi Belajar Mengajar* (Jakarta :Rajawali Pers,2001)Page 82

In addition, the ideals of child are strongly influenced by the level of their ability. A child who has good ability, generally have goals that are realistic, if compare with the level of ability that it less²

Extrinsic motivation in case or state that coming from the outside of student that leads him to do learning.³

This form intrinsic motivation related with learning activities and stimulus from the environment, parent, teacher, and their friend. The example of learning motivation that able to raise student motivation are :give a reward of student effort, teacher and parent support to learn, compete atmosphere in their class, all of stimulus from the environment outside of the student can Improve the motivation and encourage student to learn.

A) Planning process of Implementation ARCS (attention Relevance, Confidence, and Satisfaction) Strategy trough multimedia and simulation on natural science 5th Grade at MI Al-Fattah Malang.

Planning process in implementing ARCS (attention Relevance strategy trough multimedia and simulation in science 4th grade is based on concept of learning that applying ARCS strategy.

The implementation are conducted twice, cycle I on 13th November 2012 and cycle II on 23rd November 2012 on 5th class with two meeting and the material is about The changing process of thing. In order to conduct the research the researcher makes a planning process as listed below:

² Akyas Azhari psikologi pendidikan,Cet Ke 1(Semarang Dina Utama,1996)

³ Muhibbinsyah,Psikologi Pembelajaran dengan pendekatan baru,cet ke 7(bandung :Remaja Rosdyakarya 2002) page 82

1. Make an assessment sheet to measure student ability
2. Prepare a media for learning like interactive multimedia (macromedia flash and video and picture) also some object for experiment (ice, candle, sugar, water, and glass).
3. Make a design of teaching planning process
4. Make question for pretest and post test
5. Set the activity of experiment
6. Make questionnaire for student
7. Make the teacher evaluation sheet to evaluate learning process
8. Make a worksheet for homework
9. Make a task list for a student
10. Preparing the evaluation result and reward for student.

B) Process of Implementation ARCS (attention Relevance strategy trough multimedia and simulation on natural science 5th Grade at MI Al-Fattah Malang.

The Implementation of pretest the researcher conducts the observation of pretest that still applies conventional method with monotone learning strategy. The teacher explains in front of class while student listen and write the teacher explanation.

Based on result of observation, can be knew that conventional method of learning with just writing and resume of material isn't effective for the student, because they just get information on text book and can't developed themselves.

If student always do monotone activity, their motivation of learning become less, and the result of learning with less motivation are have negative impact in student achievement in learning.

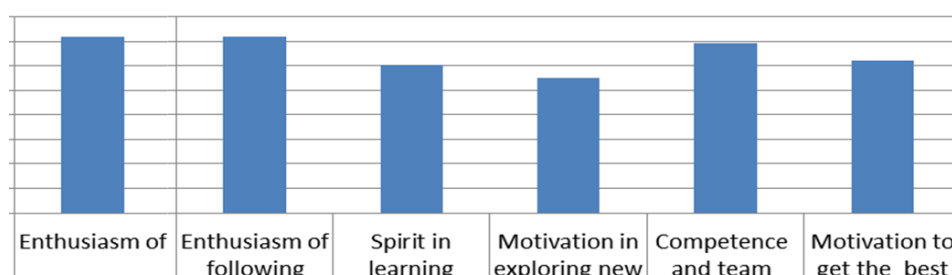
By lecturing student only remember 20% of material, , the student will remember the material until 90 % when they learn with complete activity hear, seen, and do the activity to understanding the material, beside they need various activity, they also need motivation in learning process.

In Implementation of ARCS by various activity supported by multimedia and simulation student get live experience and by motivation student able to activated their imagination and ability to develop their knowledge, because motivation help the student to reach maximum result in learning.

C) Process of Assessment in Implementation ARCS (attention Relevance strategy trough multimedia and simulation on natural science 5th Grade at MI Al-Fattah Malang.

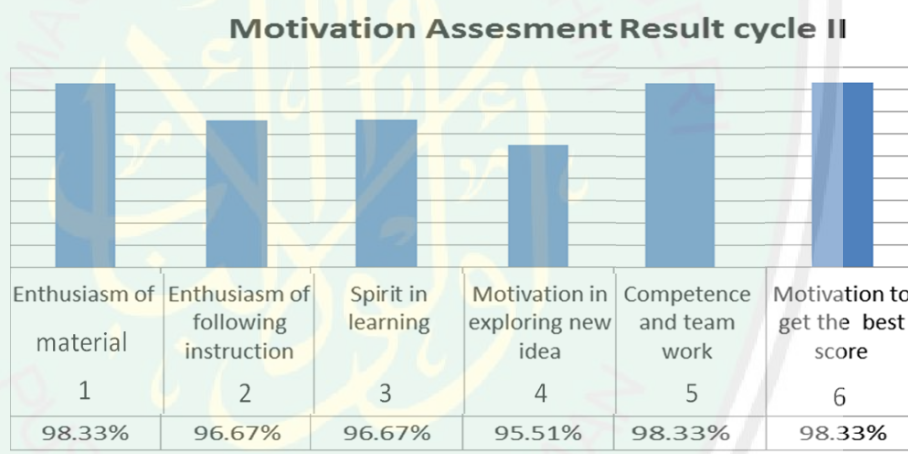
According evaluation in every cycle we get the data from first test in pre research the motivation of student just 50.00% and Improved on cycle I 63, 35 % .and they get score in pretest with average 53, 00 and by implemented ARCS strategy result of motivation and score form pretest to cycle I are increased, but it didn't passed the target of research minimum score 75% and the standard minimum to graduate on science are 78.

Motivation Assesment Result



Picture 5.1 the result of motivation assessment in cycle I

And to solve the problem and reach the targeted score researcher conduct cycle II that got score 98,35 and average of score 85,it passed the targeted score after modify the learning strategy with multimedia and simulation.



Picture 5.2 result of motivation assessment in cycle

From this data we can conclude that by using ARCS the student motivation are increased.

The result of data analysis by product moment on Microsoft excel 2010 by the formula $R(\text{Data Validity}) = \text{PEARSON}(\text{The student result of test} : \text{the student motivation quiztioneer})$, on cycle I is $R = -1 < 0.71539116 < 1$ And on cycle II $R = 0.612712249$, the data show correlation between student motivation and student learning result because $R > -1$, the data result isn't valid if the

result (R) is less than 0,60.and the conclusion is there is relation between Student motivation and student learning result.



CHAPTER VI

CONCLUSION AND SUGESTION

A) Conclusion

1. Based the research finding and the data of chapter forth and discussion on chapter fifth, we can take conclusion of research result of cycle I until cycle II are: Planning action to conduct ARCS (attention, relevance, confidence and satisfaction strategy trough multimedia and simulation is suitable with learning objective. The process of ARCS planning are included some activity like described below :
 - a. Get the student *attention* by video or unique fact of science
 - b. Prepare a media for learning like interactive multimedia (macromedia flash and video and picture) also some object for experiment and fin *relevance* fact based on the material.
 - c. Make a design of group discussion and presentation to raise student *confidence*.
 - d. Make the teacher evaluation sheet to evaluate learning process ,
 - e. Make a simple worksheet for homework, Make a task list for a student, preparing the evaluation result and give a reward for student to raise the *satisfaction* of learning.
2. The process of Implementation ARCS (attention, relevance, confidence, and satisfaction trough multimedia and simulation are

success to increase student motivation, from cycle I until cycle II, on cycle I. the researcher collaborated with the teacher to set the learning activity and strategy to improve student motivation. And on the cycle II after reflected the problem the researcher select some activity related ARCS to solve the student problem in learning, but sometime class become uncontrolled if all student become active, to solve the problem the teacher can make an agreement with student or give a boundaries in manage time of learning.

3. Result of implementation ARCS (attention, relevance, confidence and satisfaction strategy trough multimedia and simulation was success in improving student motivation on learning science. This method also make student easier to understanding material. The increase of student motivation from cycle I to cycle II is from 63, 35 % up to 98, 33% related with score of student from pretest average is 50 increased to 74 in cycle I and at the last cycle the average of achievement score is 87,53 %.based on this data we can conclude Implementation of ARCS strategy trough multimedia and simulation can improve student motivation in learning natural science 5th grade at MI Al-Fattah Malang.

B) Suggestion

1. For The Next Researcher:

This research is able for reference to the next research, some improvement, activity and media are able to modify and combine with the other model, strategy, and method for the next research.

2. For Teacher:

- a. Teacher should know and comprehend more about model, approach, and method what should be applied to achieve a basic competence that targeted
- b. Teacher should prepare a various media to take student interest with the material and should give stimulus to their student with praise and give a reward.
- c. Teacher should prepared some media to attract the student like multimedia and simulation in learning because it will improve student motivation, kind of media such as media from researcher use are: macromedia flash simulation video, Wonder share quiz creator, and more.
- d. Professionalism of teacher also a factor for student to make their successful. The teacher must expert in teaching material and able to manage the class and teacher should apply several of method, strategy, and model in learning process.
- e. When teacher find a problem in a learning he should find solution and looking for suitable strategy to solve the problem.

BIBLIOGRAPHY

- Arief S dkk. 2003. *Media Pendidikan*. Jakarta : P.T Raja Grafindo Persada.
- Arsyad, Ashar. 1996. *Merdia pengajaran*. Jakarta : PT Raja Grafindo Persada.
- Arikunto, Suharsimi.2008. *Prosedur Peneltian Suatu Pendekatan Praktik*. Jakarta: Rineka Cipta.
- Asyirint, Gustaf. 2010. *Langkah-Langkah Cerdas Menjadi Guru Sejati Berprestasi*. Yogyakarta: Bahtera Buku.
- Azhari, Akyas. 1996. *Psikologi Pendidikan*, Cet. Ke-1. Semarang : Dina Utama Semarang.
- Asy'ari,Muslichah 2006 *Hakekat Pembelajaran IPA di Sekolah Dasar*
- Bahri, Djamarah, Syaiful. 2000. *Guru Dan Anak Didik Dalam Interaksi Edukatif*, Jakarta: PT. Rineka Cipta.
- Colin, Rose. Dan Malcolm. 2002. *Accelerated Learning*. Bandung : Nuansa
- Daryanto. 2010. *Media pembelajaran*. Yogyakarta : gava media.
- Dunn, R., Dunn, K., & Price, G. E. (1984). *Learning style inventory*. Lawrence, KS, USA: Price Systems
- Dedi Supriawan dan A. Benyamin Surasega, 1990. *Strategi Belajar Mengajar* (Diktat Kuliah). Bandung: FPTK-IKIP Bandung.
- Dimyati dan Mudjiono, 2006 *Belajar dan Pembelajaran* Jakarta: Rineka Cipta
- Hisyam Zaim dkk, 2002 *Desain Pembelaian di Perguruan Tinggi*. CTSD IAIN, Yogya.

Hamalik, Oemar. 2007. *Kurikulum dan Pembelajaran*. Jakarta: Bumi Aksara.

Hasan, M. Iqbal. 2002. *Pokok Materi Metodologi penelitian & Aplikasinya*. Jakarta: Ghalia Indonesia.

<http://www.multimedia.com/>. Accessed on 5 February 2013 at 09.25 PM.

<http://www.total.or.id/info.php?kk=Macromedia%20Flash>. Accessed on 5 February 2013 at 09.10

<http://en.wikipedia.org/wiki/Simulation> accessed on June 2013 at 15.30

<http://en.wikipedia.org/wiki/Simulation> accessed on June 2013 at 16.00

John M. Echols dan Hassan Shadily. 1996. *Kamus Inggris-Indonesia* (Jakarta: PT. Gramedia.

Janet Bremer, High School Technology Teacher, Cincinnati Hills Christian Academy, Cincinnati, OH, Janet.Bremer@chca-oh.org. Accessed on 23 February 2013 at 11.05

Jacobsen, david. dkk. 2009. *Model for teaching*. USA : New jersey.

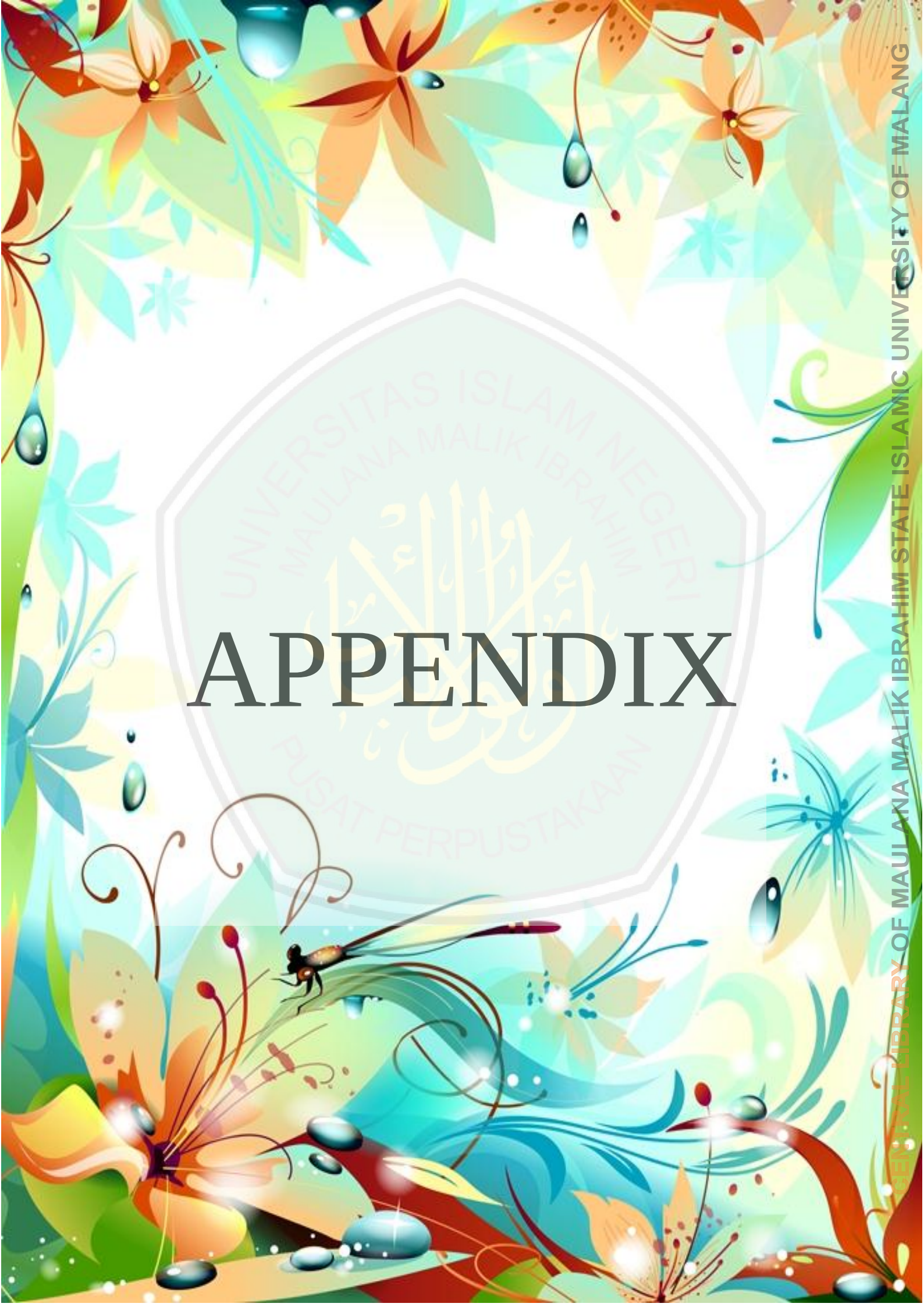
Keller, J.M. 2010 *Motivational Design for Learning and Performance: The ARCS Model Approach*

Keller, J. M. 1983. Motivational design of instruction. In C. M. Reigeluth (Ed.), *Instructional-design theories and models: An overview of their current status*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Keller, J. M. 1984. The use of the ARCS model of motivation in teacher training. In K. Shaw & A. J. Trott (Eds.), *Aspects of Educational Technology Volume XVII: staff Development and Career Updating*. London: Kogan Page.

- Keller, J. M. 1987. Development and use of the ARCS model of motivational design. *Journal of Instructional Development*, 10(3), 2-10. John Keller's Official ARCS Model Website
- Mansour Fakih, dkk, 2001 *Pendidikan Populer membangun kesadaran kritis*, Pustaka Pelajar, Yogya.
- Moleong, Lexy. 2002. *Metodologi Penelitian Kualitatif*. Bandung: PT. Remaja Rosdakarya.
- M. Purwanto, Ngalim. 2006. *Psikologi Pendidikan*. Bandung: Remaja Rosdakarya.
- Muhibbinsyah. 2002. *Psikologi Pendidikan dengan Pendekatan Baru*, Cet. Ke-7, Bandung : Remaja Rosdakarya.
- Roestiyah. 1991. *Strategi Belajar Mengajar*. Jakarta: Media pustaka.
- Sagala , Syaiful. 2009. *Konsep dan Makna Pembelajaran Untuk Membantu Memecahkan problematika Belajar dan Mengajar*. Bandung, CV Alfabeta.
- Suciati dkk, Teori Belajar dan motivasi, 2001, Proyek pengembangan UT Ditjen
- Sardiman. 1986. *interaksi dan motivasi belajar mengajar*. Jakarta: cv. Rajawali.
- Sanjaya, Wina. 2007. *strategi pembelajaran*. jakarta : kencana.
- Sudjana, Nana. 1990. *Media Pengajaran*. Bandung: C.V. Sinar Baru Bandung.
- Sugiono. 2005. *Memahami Penelitian Kualitatif*. Bandung: CV. Alfabeta
- Universitas Islam Negeri Malang. 2004. *Bahan Ajar Evaluasi Pembelajaran, Kumpulan Berbagai Pedoman Evaluasi Pembelajaran dari Departemen Pendidikan Nasional*.

- Usman, Moh. Uzer. 1995. *Menjadi Guru Profesional*. Bandung: Remaja Rosdakarya.
- Uzer, Usman. 1995. *Menjadi Guru Profesional*. Bandung: Remaja Rosdakarya.
- Uno, Hamzah B.. 2007. *Teori Motivasi dan Pengukurannya Analisis di Bidang Pendidikan*. Jakarta: Bumi Aksara.
- Wiriaatmadja, Rochiati. 2007. *Metode Penelitian Tindakan Kelas*. Bandung: Remaja Rosdakarya.
- Wahidmurni. 2005. *Bahan Ajar Penelitian Pembelajaran*. Fakultas Tarbiyah UIN Malang.
- Wahidmurni. 2008. *Cara Mudah Menulis Proposal Peneliitian Lapangan*. Malang : UM Press.
- Widha Bhinartika, 2011 “*Upaya meningkatkan pembelajaran IPA melalui model pembelajaran ARCS (Attention, Relevance, Confidence, Satisfaction) pada siswa kelas IV SDN Jatimulyo 1 Kecamatan Kauman Kabupaten Tulungagung 2011 Universitas Negeri Malang*,”
- WS Winket “*Psikologi Pengajaran*”, 1987, Gramedia Jakarta.



APPENDIX

EARLY CONDITION OF (PRE TEST)
STUDENT MOTIVATION ASSESMENT

No	Student Number	NISN	Name	Score		
				Pre test	Pay attention to teacher explanation	Follow teacher Instruction(task)
1	1159	0015498584	Abdillah Kurniawan	60	√	√
2	1160	0015498581	Agung Setyono	50		√
3	1161	0021578845	Ahmad Fauzan Rohmani	50		√
4	1212	0021497015	Ainul Mahbubi	50		√
5	1163	0021578837	Ariesta Kurnia Putri	30		
6	1191	0015498589	Avilia Rohmita	40		
7	1272	0012103864	Dinda Ayu Novitasari	40		
8	1189	0015498588	Fitrotul Isnaini	50		√
9	1164	0021578838	Gading Renandra Putra Koli	60	√	√
10	1165	0021578851	Imadul Ummah	50		√
11	1168	0015498583	Iqbal Burhanuddin	50		√
12	1166	0021578836	Ismail Juan Firmansyah	50		
13	1275	0012953330	M. Ilham Aminullah	30		
14	1170	0021578846	M. Syafnat Fu'any Al Arif	60	√	√
15	1171	0015498585	Mahfud Junaidi	60	√	√
16	1169	0015498582	Maulana Salman al Farizy	50		
17	1277	0021255434	Miftahul Jannah	50		√
18	-	-	-			
19	1174	0021578842	Mochammad Misbahul Karim	50		√
20	1172	0021578844	Muhammad Syafiq Wafaa Fairuuzi	50		√
21	1173	0021578832	Muhammad Taufiq Hidayatullah	50		√
22	1175	0021578843	Nadia Fauziyah Nashih	50		√
23	1176	0021578847	Nissa Mariana	60	√	√
24	1153	0015539168	Rafly Firmansyah	60	√	√
25	1178	0015498591	Rahmadani Yuda Prawira	60		√
26	1177	0015498592	Ramadhha Pasa Jaya Nur Cahya	30		√
27	1194	0021578849	Rayhan Syarif El-Wafie	60	√	√

28	1179	0021578835	Ria Febrianty	60		√
29	1181	0021578848	Rian Bayu Angga	50		√
30	1180	0015498587	Rieke Novianti	50		√
31	1276	0001329721	Rinda Dwi Maulana	50		√
32	1182	0021578850	Rokhmatul Ummah	50		√
33	1155	0015539181	Safira Rizka Amalia	50		√
34	1183	0015498590	Sheva Hildan Ramadhan	50		√
35	1184	0021578834	Tristanaldo Kusuma Mahardika	50		√
36	1186	0021578840	Vita Aprilliana	50		√
37	1187	0021578839	Yazh Johar Haptama	50		√
38	1188	0021578852	Yuanda Putri Rizki Ramadhani	50		√
39	1202	9992042420	Yuangga Eko Prasetyo	50		√

Form the data above “most of student not passed the test and unable participate in learning process”

Only **17,98 %** student, who pay attention to teacher explanation,although **82 %** of student do

The teacher instruction but

Based on the data the researcher can conclude that student motivation is poor in this phase of pretest.

SCORING GUIDELINES OF MOTIVATION INDICATOR OF STUDENT

NO	ASPECT OF ASSESMENT	SCORING INDICATOR	SCORE
1	Enthusiasm with the material	The material is attractive for student	4
		The material isn't attractive but it easy to understand by student	3
		The material is difficult but it easy to understand by student	2
		The material is difficult and the student unable to understand the material	1
2	Enthusiasm of following instruction	Student active to conduct the task	4
		Student conduct some task	3
		Student conduct little part of task	2
		Student not active to conduct a task	1
3	Spirit in learning	Student focus and interact with the material	4
		Student focus in material	3
		Sometimes student not listen the material	2
		Student prefer to do another activity than listen the material	1
4	Motivation in exploring new idea	Student give a respond by asking question and give conclusion related with the material	4
		Student give a respond by asking the question	3
		Student just answer question form teacher	2
		There is no respond form student	1
5	Competence and team work	All of student participate in teamwork	4
		Some student participate in teamwork	3
		Half of group member participate in team work	2
		The task is dominate by one student	1
6	Motivation to get the best score	Score of evaluation > 85	4
		Score of evaluation 70-84	3
		Score of evaluation 60-69	2
		Score of evaluation >59	1

The researcher and the teacher observe the student behavior and make an assessment based on Instrument Above.

To get the data result the total of score is processed by formula

$$\frac{\sum \text{score obtained}}{\text{Total score}} \times 100 \% = \text{percentage of score}$$

STUDENTS MOTIVATION ASSESSMENT ON CYCLE I

School Name : MI Al-Fattah
 Subject : Natural Science
 Material : The changing process of thing
 Class/semester : V/ II

No	Name of student	Enthusiasm with the material				Enthusiasm of following instruction				Spirit in learning				Motivation in exploring new idea				Competence and team work				Motivation to get the best score				Total score obtained
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	
1	Abdillah Kurniawan			√				√				√				√					√			√		19
2	Agung Setyono				√				√			√				√				√			√			17
3	Ahmad Fauzan Rohmani			√				√				√				√				√		√				18
4	Ainul Mahbubi		√				√					√				√				√		√				18
5	Ariesta Kurnia Putri				√			√			√					√				√		√				18

	Mariana				✓				✓			✓				✓			✓						
24	Rafly Firmansyah			✓				✓			✓				✓			✓		✓					19
26	Rahmadani Yuda Prawira	✓				✓				✓				✓			✓			✓					18
27	Ramadha Pasa Jaya Nur Cahya				✓				✓			✓			✓				✓						19
28	Rayhan Syarif El-Wafie			✓				✓			✓				✓				✓						18
29	Ria Febrianty	✓				✓														✓					18
30	Rian Bayu Angga				✓				✓			✓			✓				✓						20
31	Rinda Dwi Maulana	✓				✓				✓				✓			✓			✓					18
32	Rokhmatul Ummah	✓				✓				✓				✓			✓			✓					18
33	Safira Rizka Amalia	✓				✓				✓				✓			✓			✓					18
34	Sheva Hildan	✓				✓				✓				✓			✓			✓					18

Total score of Motivation to get the best score = 485

Average score of Enthusiasm in Material :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{560}{720} \times 100\% = 71\%$$

Total of score 720

Average score of Enthusiasm of following instruction :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{560}{720} \times 100\% = 71\%$$

Total of score 720

Average score of Total score of Spirit in learning :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{470}{720} \times 100\% = 60\%$$

Total of score 720

Average score of effort to complete the task with better :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{430}{720} \times 100\% = 55\%$$

Total of score 720

Average score of Motivation in performance :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{540}{720} \times 100\% = 69\%$$

Total of score 720

Average score of Motivation in performance :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{485}{720} \times 100\% = 62\%$$

Total of score 720

Percentage : $\frac{\sum \text{score obtained} \times 100\%}{\text{Total score}} = 63\%$

Total score

MAULANA MALIK IBRAHIM STATE ISLAMIC UNIVERSITY OF MALANG

Material : Characteristic of thing

[illegible]

16	Maulana Salman al Farizy				√					√				√					√				24
17	Miftahul Jannah				√				√				√						√				24
18	Mochamma d Misbahul Karim				√				√				√						√				24
19																							24
20	Muhammad Syafiq Wafaa Fairuuzi				√					√				√					√				24
21	Muhammad Taufiq Hidayatullah				√					√				√					√				24
22	Nadia Fauziyah Nashih				√					√				√					√				24

23	Nissa Mariana				√					√				√					√				24
24	Rafly Firmansyah				√				√				√						√				24
26	Rahmadani Yuda Prawira				√				√				√						√				24
27	Ramadha Pasa Jaya Nur Cahya				√				√				√						√				24
28	Rayhan Syarif El- Wafie				√				√				√						√				18
29	Ria Febrianty				√				√		√					√		√					18
30	Rian Bayu Angga				√				√				√						√				20
31	Rinda Dwi Maulana				√				√				√			√		√					20
32	Rokhmatul Ummah				√				√				√			√		√					20

33	Safira Rizka Amalia				√				√				√				√			√	√					20
34	Sheva Hildan Ramadhan				√				√				√				√			√	√					20
35	Tristanaldo Kusuma Mahardika				√				√				√				√			√				√		24
36	Vita Aprilliana				√				√				√				√			√				√		24
37	Yazh Johar Haptama				√				√				√				√			√				√		24
38	Yuanda Putri Rizki Ramadhani				√				√				√				√			√	√					20
39	Yuangga Eko Prasetyo				√				√				√				√			√				√		24

Description

4 = very good

3 = good

2 = enough

1 = less

Amount of students = 39

Total score = 780

Total score of Enthusiasm in Material = 780

Total score of Enthusiasm of following instruction = 780

Total score of Spirit in learning = 779
Total score of Motivation in exploring new idea = 778
Total score of Competence and team work = 778
Total score of Motivation to get the best score = 778

Average score of Enthusiasm in Material :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{780}{780} \times 100\% = 100\%$$

Average score of Enthusiasm of following instruction :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{780}{780} \times 100\% = 100\%$$

Average score of Total score of Spirit in learning :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{778}{780} \times 100\% = 99.74\%$$

Average score of effort to complete the task with better :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{779}{780} \times 100\% = 99.87\%$$

Average score of Motivation in performance :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{778}{780} \times 100\% = 99.74\%$$

Average score of Motivation in performance :

$$\frac{\sum \text{score obtained} \times 100\%}{\text{Total of score}} = \frac{779}{780} \times 100\% = 99\%$$

Total of score 780

Percentage : $\frac{\sum \text{score obtained} \times 100\%}{\text{Total score}} = 98\%$

Total score



Checking data validity of correlation between student motivation and the learning result

The researcher use Product moment formula to check correlation between student motivation and student learning result,

the formula is described below :

$$R = \frac{n\sum xy - (\sum x)(\sum y)}{\sqrt{\{n\sum x^2 - (\sum x)^2\} \{n\sum y^2 - (\sum y)^2\}}}$$

n = amount of data X and Y

$\sum x$ = Amount of Variable X

$\sum y$ = Amount of Variable Y

$\sum x^2$ = Quadrat from total of Variable X

$\sum y^2$ = Quadrat from total of Variable Y

$\sum xy$ = Multiplication of Total Variable X and Variable Y

the researcher collect the data from questioner and student result of test

Result of data is measured by -1,00 until 1,00

If $R > 0.60$ the checking data is valid, and there is relation between student motivation and the student learning result.

PRODUCT MOMENT ANALYSIS

No	Name	Score	Questioner
		Cycle I test	
1	Abdillah Kurniawan	80	19
2	Agung Setyono	70	17
3	Ahmad Fauzan Rohmani	70	18
4	Ainul Mahbubi	70	18
5	Ariesta Kurnia Putri	60	18
6	Avilia Rohmita	70	16
7	Dinda Ayu Novitasari	60	16
8	Fitrotul Isnaini	70	19
9	Gading Renandra Putra Koli	70	19
10	Imadul Ummah	60	16
11	Iqbal Burhanuddin	60	16
12	Ismail Juan Firmansyah	70	18
13	M. Ilham Aminullah	50	16
14	M. Syafnat Fu'any Al Arif	70	19
15	Mahfud Junaidi	70	19
16	Maulana Salman al Farizy	70	18
17	Miftahul Jannah	60	17
18	-		
19	Mochammad Misbahul Karim	70	18
20	Muhammad Syafiq Wafaa Fairuuzi	70	19
21	Muhammad Taufiq Hidayatullah	70	19
22	Nadia Fauziyah Nashih	70	18
23	Nissa Mariana	80	19
24	Rafly Firmansyah	70	18
25	Rahmadani Yuda Prawira	80	
26	Ramadha Pasa Jaya Nur Cahya	70	18
27	Rayhan Syarif El-Wafie	70	18
28	Ria Febrianty	80	20
29	Rian Bayu Angga	70	18

30	Rieke Novianti	70	18
31	Rinda Dwi Maulana	70	18
32	Rokhmatul Ummah	70	18
33	Safira Rizka Amalia	80	18
34	Sheva Hildan Ramadhan	70	18
35	Tristanaldo Kusuma Mahardika	70	18
36	Vita Aprilliana	70	18
37	Yazh Johar Haptama	70	18
38	Yuanda Putri Rizki Ramadhani	70	18
39	Yuangga Eko Prasetyo	70	18

The result of data analysis is $-1 < \mathbf{0.71539116} < 1$

And the data show correlation between student motivation and student learning result.

This data is analyzed by *Microsoft excel* formula =PEARSON (all score of test,the quiztioneer)

No	Name	Score	
		Cycle II	quitioner
1	Abdillah Kurniawan	100	24
2	Agung Setyono	100	24
3	Ahmad Fauzan Rohmani	100	24
4	Ainul Mahbubi	90	20
5	Ariesta Kurnia Putri	100	24
6	Avilia Rohmita	100	24
7	Dinda Ayu Novitasari	100	24
8	Fitrotul Isnaini	100	24
9	Gading Renandra Putra Koli	90	20
10	Imadul Ummah	90	20
11	Iqbal Burhanuddin	90	24
12	Ismail Juan Firmansyah	100	24
13	M. Ilham Aminullah	90	24
14	M. Syafnat Fu'any Al Arif	90	24
15	Mahfud Junaidi	90	24
16	Maulana Salman al Farizy	90	24
17	Miftahul Jannah	90	24
18	-		24
19	Mochammad Misbahul Karim	90	24
20	Muhammad Syafiq Wafaa Fairuuzi	90	24
21	Muhammad Taufiq Hidayatullah	100	24
22	Nadia Fauziyah Nashih	100	24
23	Nissa Mariana	100	24
24	Rafly Firmansyah	100	24
25	Rahmadani Yuda Prawira	100	24
26	Ramadha Pasa Jaya Nur Cahya	90	24
27	Rayhan Syarif El-Wafie	80	18
28	Ria Febrianty	90	20
29	Rian Bayu Angga	90	20
30	Rieke Novianti	90	20

31	Rinda Dwi Maulana	90	24
32	Rokhmatul Ummah	90	20
33	Safira Rizka Amalia	100	24
34	Sheva Hildan Ramadhan	90	24
35	Tristanaldo Kusuma Mahardika	90	24
36	Vita Aprilliana	90	20
37	Yazh Johar Haptama	100	24
38	Yuanda Putri Rizki Ramadhani	100	24
39	Yuangga Eko Prasetyo	90	20

The result of data analysis is “ **0.612712249**”

And the data show **correlation between student motivation and student learning result.**

This data is analyzed by *Microsoft excel* formula =PEARSON (all score of test,the quiztioneer)

**RENCANA PELAKSANAAN PEMBELAJARAN
(RPP)**

Sekolah : MI Al-Fattah Malang
Mata Pelajaran : Ilmu Pengetahuan Alam (IPA)
Kelas/Semester : V/1
Pertemuan ke : I (siklus I)
Materi Pokok : BENDA DAN SIFATNYA
waktu : 2 x 35 menit (1 x pertemuan)
Hari/tanggal : -

A. Standar Kompetensi :

Memahami hubungan sifat bahan dengan penyusunnya dan perubahan sifat benda sebagai hasil suatu proses.

B. Kompetensi Dasar

Mendeskripsikan perubahan benda karena pemanasan, pendinginan, pembusukan pengkaratan, baik perubahan sementara atau tetap.

C. Indikator

1. Mendeskripsikan dan memahami perubahan benda (pemanasan, pendinginan, penyubliman, pembakaran, percampuran, pembusukan, perkaratan)
2. Siswa dapat menyebutkan contoh perubahan fisika(dapat kembali) dan perubahan kimia(tetap)
3. Mendeskripsikan ciri benda yang telah berubah bentuk,aroma,warna,kekuatan

D. Tujuan Pembelajaran :

1. Siswa dapat Memahami penyebab perubahan pada benda
 - Pemanasan
 - Pendinginan
 - Penyubliman
 - Pembakaran
 - Pencampuran dengan air
 - Pembusukan

- Perkaratan
- 2. Siswa dapat Menyebutkan contoh perubahan yang dapat kembali.
- 3. Siswa dapat Menyebutkan contoh perubahan yang tidak dapat kembali.
 - Pembusukan pada sayuran dan buah
 - Pemasakan nasi
 - Pembakaran kertas
 - Perkaratan pada besi

E. Karakter siswa yang diharapkan : *Kreatif, Mandiri, Rasa ingin tahu, Peduli lingkungan*

F. Materi Essensial

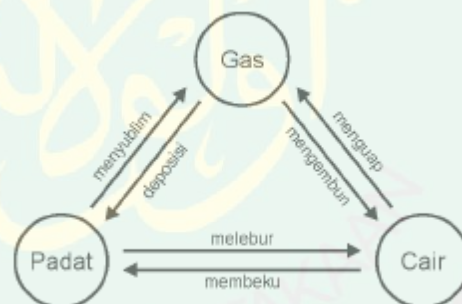
PERUBAHAN SIFAT BENDA

Benda dapat mengalami perubahan sifat, secara alami atau pengaruh tindakan manusia. Perubahan sifat benda antara lain: perubahan wujud, perubahan bentuk, perubahan warna, perubahan kekerasan, perubahan bau, dan perubahan kelenturannya.

a) Perubahan Wujud

Wujud benda ada 3 macam, yaitu :

- 1) benda padat,
- 2) benda cair, dan
- 3) benda gas.



Masih ada lagi perubahan wujud yang lain, seperti mengkristal, menyusut, dan memuai.

b) Perubahan Bentuk

Bentuk benda ada bermacam-macam, ada yang berbentuk bulat, lonjong, kotak, persegi, kerucut, dan lain-lain. Bentuk-bentuk benda dapat mengalami perubahan. Contoh air di dalam panci dapat diubah menjadi bentuk yang bermacam-macam sesuai dengan cetakannya.

c) Perubahan Warna

Pernahkah terpikirkan olehmu, mengapa bajumu yang baru, lama kelamaan menjadi kusam? Baju tersebut sering dicuci dan dijemur di terik matahari. Tindakan inilah yang menyebabkan warna pakaianmu memudar. Benda-benda di sekitarmu seperti foto, pensil, kertas, sepatu, dan tas yang semula indah warnanya lama kelamaan juga akan memudar karena pengaruh udara dan panas.

d) Perubahan Kekerasan

Coba kamu perhatikan benda-benda di sekitarmu yang semula keras seperti batu dapat berubah kekerasannya karena pengaruh perubahan cuaca. Contoh: kayu yang semula keras dapat lapuk, karena pengaruh hujan dan panas

e) Perubahan Bau

Pernahkah kamu mengamati tikus mati yang membusuk? Tikus atau binatang lain yang membusuk akan mengeluarkan bau yang tidak sedap. Hal ini terjadi disebabkan oleh mikroba.

f) Perubahan Kelenturan

Benda-benda dari karet biasanya lentur dan elastis. Kelenturan karet ini dapat berubah karena pengaruh panas, minyak, atau bensin. Karet yang terus-menerus terkena panas matahari akan berubah menjadi kaku. Jika karet tersebut kita regangkan, karet menjadi putus karena rapuh. Begitu pula karet yang terkena minyak atau bensin, karet pun dapat mengembang dan menjadi rapuh.

Faktor-Faktor yang Memengaruhi Sifat Benda

Banyak sekali faktor yang dapat memengaruhi sifat benda, di antaranya sebagai berikut.

a) Pemanasan

Sifat benda akan berubah karena pengaruh suhu atau pemanasan.

Contoh: pakaian yang basah bila dijemur di terik matahari akan menjadi kering, nasi yang basah bila dijemur menjadi kering dan keras, dan lain-lain.



b) Pembakaran

Sifat benda akan berubah karena proses pembakaran. Contohnya: kayu yang dibakar akan berubah bentuk dan warnanya, serta mengeluarkan asap (menjadi arang, warnanya hitam, dan asap berwujud gas). Sifat arang dan asap berbeda dengan sifat kayu.



c) Pendinginan

Sifat benda akan berubah karena proses pendinginan. Contohnya air yang didinginkan akan berubah menjadi es batu. Air adalah benda cair, sedangkan es batu merupakan benda padat. Sifat es berbeda dengan sifat air.



d) Pembusukan

Perubahan sifat benda dapat disebabkan karena pemanasan, pendinginan, pembakaran, pembusukan, pencampuran, dan perkaratan.



e) Pencampuran

Sifat benda akan berubah karena proses pencampuran. Contohnya: pembuatan tembok atau gedung dengan cara mencampurkan air, pasir, dan semen menjadi satu. Air merupakan benda cair, sedangkan semen dan pasir merupakan benda padat. Setelah terjadi pencampuran ketiganya dan dibiarkan beberapa saat, menjadi sangat keras dan memiliki sifat yang berbeda dengan aslinya.



f. Perkaratan

Logam yang sering terkena air akan cepat berkarat, karena air banyak mengandung oksigen. Jika logam, terutama besi dan baja serta seng bersentuhan langsung dengan udara dan air, maka akan terjadi reaksi oksigen membentuk karat. Warna besi atau seng berubah menjadi cokelat atau hitam. Besi atau seng yang semula keras dan kokoh berubah menjadi rapuh dan mudah patah.



Besi yang berkarat

Perubahan Sifat Benda yang Sementara(fisika) dan Bersifat Tetap(Kimia)

- Perubahan fisika adalah perubahan zat yang sifatnya sementara (dapat kembali ke wujud semula). Contoh: membeku, mencair, menyublim, menguap, mengembun, memuai, menyusut. Perubahan fisika tidak menghasilkan zat baru.



- Perubahan kimia adalah perubahan zat yang sifatnya tetap/kekal/abadi (tidak dapat kembali ke wujud semula). Contoh pembusukan, perkaratan, dan pembakaran. Perubahan kimia menghasilkan zat baru.



G. Metode Pembelajaran

- ARCS(Attention,Relevance,Convindence,and Satisfaction)
- Card short
- Tanya Jawab
- Ceramah
- Group discussion

H. Media Belajar

- Buku IPA 5 BSE
- Macromedia flash player
- Gambar tentang perubahan sifat benda
- Wondershare quis creator

I. Rincian Kegiatan Pembelajaran Siswa

Pertemuan ke 1	
1. Pendahuluan Apersepsi dan Motivasi(Attention) : ☞ Guru mengucapkan salam dan mengawali kegiatan dengan membaca	(5 menit)

Basmallah, dan sekaligus mengabsen siswa (<i>karakter religius</i>) ☞ Menyampaikan Indikator pencapaian kompetensi dan kompetensi yang diharapkan ☞ Guru menarik perhatian siswa dengan membakar tisu (<i>karakter rasa ingin tahu</i>) ☞ Guru bertanya ke siswa, “apa yang terjadi pada kertas ? (kemungkinan jawaban siswa terbakar) ☞ Guru mengaitkan kertas dengan tema yang akan di pelajari yaitu perubahan sifat benda	
2. Kegiatan Inti  Eksplorasi (Relevance) Dalam kegiatan eksplorasi : ☞ Guru menuliskan Rumusan Masalah, pada hari ini kita akan mempelajari tentang “Bagaimana perubahan sifat benda?” ☞ Guru menunjukkan berbagai macam benda yang dapat berubah. ☞ Guru menjelaskan perubahan benda dengan menggunakan slide powerpoint atau menunjukkanya secara langsung. ☞ Siswa dibagi menjadi 5 kelompok (<i>karakter sosial</i>) ☞ Guru menunjukkan video dan gambar untuk di identifikasi ☞ Guru membagikan gambar benda untuk di identifikasi ☞ Siswa mengidentifikasi benda tersebut secara berkelompok(<i>karakter kreatif</i>) ☞ Siswa menjawab dilembar yang sudah disediakan dengan berdiskusi dan mencari informasi di buku dan mencari contoh lain dalam kehidupan sehari-hari  Elaborasi (confidence) Dalam kegiatan elaborasi : ☞ Siswa menjelaskan hasil pekerjaan kelompoknya ☞ Siswa lainnya memberikan komentar ☞ Guru menanggapi hasil dari diskusi siswa ☞ Hasil kerja siswa ini kemudian disimpulkan Benda yang berubah karena pemanasan antara lain:air yang menguap,lilin yang mencair ☞ Guru mendiskusikan isi dari pembelajaran dengan media macromedia flash player dengan siswa. ☞ Siswa memahami konsep perubahan benda karena pemanasan,pendinginan,perkaratan ☞ Guru bertanya “apa kalian masih semangat?” ☞ Jika siswa kurang semangat guru memberikan gerakan sederhana untuk penyegaran(<i>karakter pantang menyerah</i>) ☞ Guru bertanya apakah siswa sudah dapat mengelompokkan benda berdasarkan perubahanya ☞ Guru menyuruh siswa secara acak untuk menjelaskan contoh perubahan benda. ☞ Guru menanggapi penjelasan siswa	(60 menit)

 Konfirmasi(satisfaction) Dalam kegiatan konfirmasi, guru: ☞ Guru menunjukkan pertanyaan dengan display LCD ☞ Guru bertanya jawab tentang hal-hal yang belum diketahui siswa ☞ memberikan umpan balik positif dan penguatan dalam bentuk lisan, tulisan, isyarat, maupun hadiah terhadap keberhasilan peserta didik. ☞ memfasilitasi peserta didik melakukan refleksi untuk memperoleh pengalaman belajar yang telah dilakukan, ☞ Guru bersama siswa bertanya jawab meluruskan kesalahan pemahaman, memberikan penguatan dan penyimpulan 3. Kegiatan Penutup Dalam kegiatan penutup, guru: ☞ Mengulang penjelasan ringkas tentang perubahan benda ☞ Merangkum atau meringkas inti pokok pelajaran ☞ Memuji hasil yang dicapai oleh peserta didik dengan memberikan pujian maupun hadiah. ☞ Mendorong untuk lebih semangat belajar untuk mencapai kompetensi yang lebih tinggi dengan menunjukkan pentingnya materi yang dipelajari. ☞ Meyakinkan akan potensi dan kemampuan peserta didik terhadap keberhasilan pencapaian kompetensi belajar untuk menumbuhkan rasa percaya diri. ☞ Memberi petunjuk untuk pelajaran/ topik berikutnya tentang lanjutan materi perubahan sifat benda. ☞ Mengadakan evaluasi pembelajaran.	
	(5 menit)
4. Pekerjaan Rumah(karakter disiplin) ☞ guru memberikan tugas mengidentifikasi benda pada siswa ☞ guru memberikan tugas membaca materi untuk pertemuan minggu depan (<i>karakter gemar membaca</i>)	

J. Penilaian:

Nilai Budaya Dan Karakter Bangsa	Indikator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrumen/ Soal
○ Kreatif : Berpikir dan melakukan sesuatu untuk menghasilkan cara atau hasil baru dari sesuatu yang telah dimiliki ○ Mandiri : Sikap dan perilaku yang tidak mudah tergantung	○ Mendeskripsikan macam-macam perubahan sifat yang ada pada benda ○ Menyimpulkan berdasarkan pengamatan bahwa tidak	Tugas Individu dan Kelompok	Laporan dan unjuk kerja Uraian Objektif	○ Jelaskanlah perubahan yang terjadi pada benda ○ Simpulkan berdasarkan pengamatan bahwa benda mengalami

pada orang lain dalam menyelesaikan tugas-tugas ○ Rasa ingin tahu : Sikap dan tindakan yang selalu berupaya untuk mengetahui lebih mendalam dan meluas dari sesuatu yang dipelajarinya, dilihat, dan didengar ○ Peduli lingkungan : Sikap dan tindakan yang selalu berupaya mencegah kerusakan pada lingkungan alam di sekitarnya, dan mengembangkan upaya-upaya untuk memperbaiki kerusakan alam yang sudah terjadi.	semua hewberubah bentuk dengan cara yang sama. ○ Menyimpulkan bahwa perubahan benda mempunyai ciri khusus ○ Siswa dapat mengetahui manfaat perubahan benda dan kerugiannya			perubahan karena perlakuan yang berbeda ○ Simpulkan bahwa perubahan benda dapat mempengaruhi bentuk dan sifat benda ○ Berikan contoh manfaat perubahan sifat benda dalam kehidupan sehari-hari
---	--	--	--	--

FORMAT KRITERIA PENILAIAN



PRODUK (HASIL DISKUSI)

No.	Aspek	Kriteria	Skor
1.	Konsep	* semua benar	4
		* sebagian besar benar	3
		* sebagian kecil benar	2
		* semua salah	1



PERFORMANSI

No.	Aspek	Kriteria	Skor
1.	Pengetahuan	* aktif berpartisipasi	4
		* kadang-kadang berpartisipasi	2
		* tidak berpartisipasi	1
2.	Praktek	* Aktif melakukan kegiatan	4
		* Kadang-kadang	2
		* Tidak aktif	1

3.	Sikap	* mampu bekerjasama dengan teman * kurang mampu bekerjasama * tidak terlibat dalam proses penyelesaian masalah	4 2 1
----	-------	--	-------------



LEMBAR PENILAIAN

No	Nama Siswa	Performance			Produk	Jumlah Skor	Nilai
		Pengetahuan	Praktek	Sikap			
1.							
2.							
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							



LEMBAR PENILAIAN KELOMPOK

No	Nama Kelompok	Performan			Produk	Jumlah Skor	Nilai
		Partisipasi	Keaktifan	Kerjasama			
	Kelompok 1						
	Kelompok 2						
	Kelompok 3						
	Kelompok 4						
	Kelompok 5						

CATATAN :

✍ **Nilai = (Jumlah skor : jumlah skor maksimal) X 10.**
11

✍ **Nilai = $\frac{11}{16} \times 10 = 9,16$**

✍ **Untuk siswa yang tidak memenuhi syarat penilaian KKM maka diadakan Remedial**

.....20 ...

Mengetahui

Kepala Sekolah

Guru Mapel IPA

.....
NIP/NIK :

.....
NIP/NIK :

NO	Nama benda	Gambar	Jenis perubahan	
			Bisa kembali(fisika)	Tetap(kimia)
1	Tapai singkong			
2	Lempeng besi berkarat			
3	Batu bata			
4	Membakar lilin			
5	Air di baju yang dijemur			
6	Buah busuk			
7	Timah yang meleleh			
8	Mengecor logam			
9	Air mendidih			
10	Es batu			

Identifikasi dan Amati Perubahan Benda Berikut !

KESIMPULAN :

.....

.....

.....

Tanggapan Guru :

.....

.....

.....

RENCANA PELAKSANAAN PEMBELAJARAN (RPP)

Sekolah : MI Al-Fattah Malang
Mata Pelajaran : Ilmu Pengetahuan Alam (IPA)
Kelas/Semester : V/1
Pertemuan ke : II (siklus II)
Materi Pokok : BENDA DAN SIFATNYA
waktu : 2 x 35 menit (1 x pertemuan)
Hari/tanggal : -

K. Standar Kompetensi :

Memahami hubungan sifat bahan dengan penyusunnya dan perubahan sifat benda sebagai hasil suatu proses.

L. Kompetensi Dasar

Mendeskripsikan perubahan benda karena pemanasan, pendinginan, pembusukan pengkaratan, baik perubahan sementara atau tetap.

M. Indikator

4. Mendeskripsikan dan memahami perubahan benda (pemanasan, pendinginan, penyubliman, pembakaran, pencampuran, pembusukan, perkaratan)
5. Siswa dapat menyebutkan contoh perubahan fisika(dapat kembali) dan perubahan kimia(tetap)
6. Mendeskripsikan ciri benda yang telah berubah bentuk,aroma,warna,kekuatan

N. Tujuan Pembelajaran :

4. Siswa dapat Memahami penyebab perubahan pada benda
 - Pemanasan
 - Pendinginan
 - Penyubliman
 - Pembakaran
 - Pencampuran dengan air

- Pembusukan
- Perkaratan
- 5. Siswa dapat Menyebutkan contoh perubahan yang dapat kembali.
- 6. Siswa dapat Menyebutkan contoh perubahan yang tidak dapat kembali.
 - Pembusukan pada sayuran dan buah
 - Pemasakan nasi
 - Pembakaran kertas
 - Perkaratan pada besi

O. Karakter siswa yang diharapkan : *Kreatif, Mandiri, Rasa ingin tahu, Peduli lingkungan*

P. Metode Pembelajaran

6. ARCS(Attention,Relevance,Convindence,and Satisfaction)
7. Card short
8. Tanya Jawab
9. Ceramah
10. Group discussion

Q. Media Belajar

5. Buku IPA 5 BSE
6. Macromedia flash player
7. Gambar tentang perubahan sifat benda
8. Wondershare quis creator

R. Rincian Kegiatan Pembelajaran Siswa

Pertemuan ke 1	
5. Pendahuluan Apersepsi dan Motivasi(Attention) : ☞ Guru mengucapkan salam dan mengawali kegiatan dengan membaca Basmallah, dan sekaligus mengabsen siswa (<i>karakter religius</i>) ☞ Menyampaikan Indikator pencapaian kompetensi dan kompetensi yang diharapkan ☞ Guru menarik perhatian siswa dengan membawakan kartu kegiatan dan memutar video sifat benda. ☞ Guru bertanya ke siswa, “apa yang terjadi dalam video tersebut ? ☞ Guru mengulang apa yang disampaikan kemarin dan membuat kesepakatan kegiatan berdasarkan kartu kuis.	(5 menit)
6. Kegiatan Inti 📖 Eksplorasi (Relevance) Dalam kegiatan eksplorasi : ☞ Guru menuliskan Rumusan Masalah, pada hari ini kita akan membahas tentang “Bagaimana perubahan sifat benda?” ☞ Guru menunjukkan berbagai macam benda yang dapat berubah	(60 menit)

melalui simulasi.

- ☞ Guru menjelaskan perubahan benda dengan menggunakan slide powerpoint atau menunjukkannya secara langsung.
- ☞ Siswa diminta memperhatikan penjelasan.
- ☞ Guru menunjukkan video dan gambar untuk diidentifikasi
- ☞ Guru memberikan lembar kerja kepada siswa
- ☞ Siswa mengidentifikasi benda yang ada di video dan mencoba mengaitkan dengan materi yang lalu.(karakter mandiri dan ingin tahu)
- ☞ Siswa menjawab dilembar yang sudah disediakan dengan berdiskusi dan mencari informasi di buku dan mencari contoh lain dalam kehidupan sehari-hari

Elaborasi (confidence)

Dalam kegiatan elaborasi :

- ☞ Siswa diberi kesempatan untuk bertanya(percaya diri)
- ☞ Siswa lainnya memberikan komentar (percaya diri)
- ☞ Guru menanggapi hasil dari diskusi siswa
- ☞ Hasil kerja siswa ini kemudian disimpulkan
Benda ada yang bisa kembali kewujud semula ada yang tidak bisa kembali ke wujud semula)
- ☞ Guru mendiskusikan isi dari pembelajaran dengan media macromedia flash player dengan siswa.
- ☞ Siswa memahami konsep perubahan Kimia (tidak bisa kembali) Fisika (dapat kembali)
- ☞ Guru bertanya “apa kalian masih semangat?”
- ☞ Jika siswa kurang semangat guru memberikan gerakan sederhana untuk penyegaran (karakter pantang menyerah)
- ☞ Guru bertanya apakah siswa sudah dapat mengelompokkan benda berdasarkan perubahanya
- ☞ Guru menyuruh siswa secara acak untuk menjelaskan contoh perubahan benda.
- ☞ Guru menanggapi penjelasan siswa

Konfirmasi(satisfaction)

Dalam kegiatan konfirmasi, guru:

- ☞ Guru menunjukkan pertanyaan dengan display LCD
- ☞ Siswa diminta untuk menjawab benar atau salah
- ☞ Guru mengevaluasi jawaban siswa.
- ☞ memfasilitasi peserta didik melakukan refleksi untuk memperoleh pengalaman belajar yang telah dilakukan,
- ☞ Guru bersama siswa bertanya jawab meluruskan kesalahan pemahaman, memberikan penguatan dan penyimpulan

7. Kegiatan Penutup (satisfaction)

Dalam kegiatan penutup, guru:

- ☞ Mengulang penjelasan ringkas tentang perubahan benda
- ☞ Memuji hasil yang dicapai oleh peserta didik dengan memberikan pujian maupun hadiah.
- ☞ Mendorong untuk lebih semangat belajar untuk mencapai kompetensi yang lebih tinggi dengan menunjukkan pentingnya materi yang

dipelajari. ☞ Meyakinkan akan potensi dan kemampuan peserta didik terhadap keberhasilan pencapaian kompetensi belajar untuk menumbuhkan rasa percaya diri. ☞ Mengadakan evaluasi pembelajaran. ☞ Guru memeriksa kartu kegiatan dan menukarkan kartu kegiatan yang terisi dengan hadiah	(5 menit)
8. Pekerjaan Rumah(karakter disiplin) ☞ guru memberikan tugas mengidentifikasi benda pada siswa ☞ guru memberikan tugas membaca materi untuk pertemuan minggu depan (<i>karakter gemar membaca</i>)	

S. Penilaian:

Nilai Budaya Dan Karakter Bangsa	Indikator Pencapaian Kompetensi	Teknik Penilaian	Bentuk Instrumen	Instrumen/ Soal
○ Kreatif : Berpikir dan melakukan sesuatu untuk menghasilkan cara atau hasil baru dari sesuatu yang telah dimiliki ○ Mandiri : Sikap dan perilaku yang tidak mudah tergantung pada orang lain dalam menyelesaikan tugas-tugas ○ Rasa ingin tahu : Sikap dan tindakan yang selalu berupaya untuk mengetahui lebih mendalam dan meluas dari sesuatu yang dipelajarinya, dilihat, dan didengar ○ Peduli lingkungan : Sikap dan tindakan yang selalu berupaya mencegah kerusakan pada lingkungan alam di sekitarnya, dan mengembangkan upaya-upaya untuk memperbaiki kerusakan	○ Mendeskripsikan macam-macam perubahan sifat yang ada pada benda ○ Menyimpulkan berdasarkan pengamatan bahwa tidak semua hewberubah bentuk dengan cara yang sama. ○ Menyimpulkan bahwa perubahan benda mempunyai ciri khusus ○ Siswa dapat mengetahui manfaat perubahan benda dan kerugiannya	Tugas Individu dan Kelompok	Laporan dan unjuk kerja Uraian Objektif	○ Jelaskanlah perubahan yang terjadi pada benda ○ Simpulkan berdasarkan pengamatan bahwa benda mengalami perubahan karena perlakuan yang berbeda ○ Simpulkan bahwa perubahan benda dapat mempengaruhi bentuk dan sifat benda ○ Berikan contoh manfaat perubahan sifat benda dalam kehidupan sehari-hari

alam yang sudah terjadi.				
--------------------------	--	--	--	--

FORMAT KRITERIA PENILAIAN



PRODUK (HASIL DISKUSI)

No.	Aspek	Kriteria	Skor
1.	Konsep	* semua benar	4
		* sebagian besar benar	3
		* sebagian kecil benar	2
		* semua salah	1



PERFORMANSI

No.	Aspek	Kriteria	Skor
1.	Pengetahuan	* aktif berpartisipasi	4
		* kadang-kadang berpartisipasi	2
		* tidak berpartisipasi	1
2.	Praktek	* Aktif melakukan kegiatan	4
		* Kadang-kadang	2
		* Tidak aktif	1
3.	Sikap	* mampu bekerjasama dengan teman	4
		* kurang mampu bekerjasama	2
		* tidak terlibat dalam proses penyelesaian masalah	1



LEMBAR PENILAIAN

No	Nama Siswa	Performance			Produk	Jumlah Skor	Nilai
		Pengetahuan	Praktek	Sikap			
1.							
2.							
3.							
4.							

5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							
13.							
14.							
15.							
16.							
17.							
18.							
19.							
20.							
21.							
22.							
23.							
24.							
25.							
26.							
27.							
28.							
29.							
30.							
31.							

32							
----	--	--	--	--	--	--	--

CATATAN :

✍ **Nilai = (Jumlah skor : jumlah skor maksimal) X 10.**
11

✍ **Nilai = $\frac{11}{16} \times 10 = 9,16$**

✍ **Untuk siswa yang tidak memenuhi syarat penilaian KKM maka diadakan Remedial**

Mengetahui
Kepala Sekolah

.....20 ...
Guru Mapel IPA

.....
NIP/NIK :

.....
NIP/NIK :

Pre test perubahan sifat benda

A. Berilah tanda silang (X) huruf a, b, c, atau d pada jawaban yang benar!

- 1) Perubahan yang terjadi pada es batu bersifat..

a.tetap
b.sementara
c.kekal
d.bercampur



- 2) Proses perkaratan besi disebabkan oleh...

a.pemanasan besi
b.oksigen dalam air
c.pembusukan oleh bakteri
d.pendinginan



- 3) Perubahan wujud benda dari cair menjadi gas disebabkan karena proses

a. pembakaran c. pendinginan
b. pemanasan d. perkaratan

- 4) Proses yang ada dalam pencetakan benda logam adalah



a. pembakaran c. perkaratan
b. pembusukan d. pendinginan

- 5) Perubahan yang terjadi pada kayu yang dibakar adalah perubahan

a. wujud c. kimia
b. dapat kembali d. fisika

- 6) Perubahan dari benda padat menjadi gas disebut.....

a.mencair c.menyublim
b.membeku d.mengembun

- 7) Perubahan wujud benda yang dapat kembali ke bentuk semula disebut

a. perubahan wujud yang tidak dapatdibalik
b. wujud yang dapat dibalik
c. perubahan wujud karena perkaratan
d. perubahan wujud karena pembakaran

- 8) Contoh perubahan fisika adalah

a. es batu c. arang
b. besi berkarat d. nasi

- 9) Contoh perubahan kimia adalah....

a.lilin yang dipanaskan
b.mentega yang di cairkan
c.pembuatan garam
d.buah yang membusuk

- 10) Berikut ini adalah kegiatan yang merupakan perubahan fisika **kecuali**.....

a.tebu yang dijadikan gula
b.singkong yang dijadikan tape
c.kapur barus yang menyublim
d.pembuatan garam

B. Berilah tanda silang (X) huruf a, b, c, atau d pada jawaban yang benar!

- 1) Perubahan yang terjadi pada es batu bersifat..

a.tetap
b.sementara
c.kekal
d.bercampur



- 2) Proses perkaratan besi disebabkan oleh...

a.pemanasan besi
b.oksigen dalam air
c.pembusukan oleh bakteri
d.pendinginan



- 3) Perubahan wujud benda dari cair menjadi gas disebabkan karena proses

a. pembakaran c. pendinginan
b. pemanasan d. perkaratan

- 4) Proses yang ada dalam pencetakan benda logam adalah



a. pembakaran c. perkaratan
b. pembusukan d. pendinginan

- 5) Perubahan yang terjadi pada kayu yang dibakar adalah perubahan

a. wujud c. kimia
b. dapat kembali d. fisika

- 6) Perubahan dari benda padat menjadi gas disebut.....

a.mencair c.menyublim
b.membeku d.mengembun

- 7) Perubahan wujud benda yang dapat kembali ke bentuk semula disebut

a. perubahan wujud yang tidak dapatdibalik
b. wujud yang dapat dibalik
c. perubahan wujud karena perkaratan
d. perubahan wujud karena pembakaran

- 8) Contoh perubahan fisika adalah

a. es batu c. arang
b. besi berkarat d. nasi

- 9) Contoh perubahan kimia adalah....

a.lilin yang dipanaskan
b.mentega yang di cairkan
c.pembuatan garam
d.buah yang membusuk

- 10) Berikut ini adalah kegiatan yang merupakan perubahan fisika **kecuali**.....

a.tebu yang dijadikan gula
b.singkong yang dijadikan tape
c.kapur barus yang menyublim
d.pembuatan gara

PRETEST

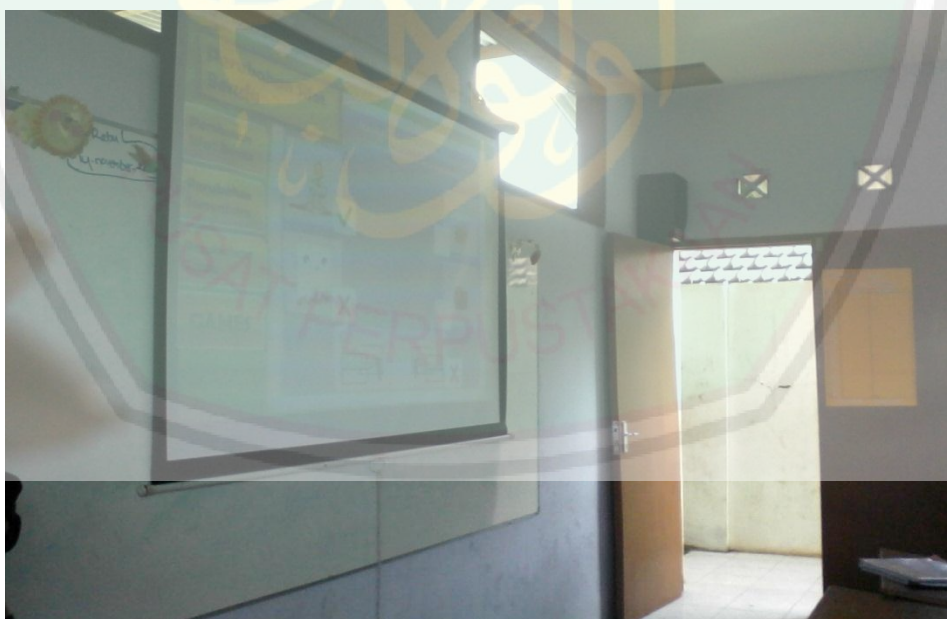


CYCLE I





CYCLE II





KARTU KEGIATAN SISWA

Nama :

No Absen :

1. Tandailah kegiatan yang telah kamu lakukan,
2. setelah menyelesaikan semua kegiatan dibawah ini laporkan hasil kegiatanmu
3. setelah semua kegiatan selesai tukarkan kartu kegiatan ini dengan hadiah menarik.

Jenis kegiatan								
Pretest	Tugas	experiment	Latihan soal	Pengamatan	Presentasi	Post test	evaluasi	

Nilai

Tanda Tangan Guru

()

The fungtion of this card is manage student activity

Because Amount of student is 39(large class) to control activity the researcher use this card.

PERCOBAAN MENARIK

Siapkan bahan-bahan berikut ini :

Alat dan Bahan :

- 1 piring atau mangkuk
- Benang, panjang 20 cm
- Es batu berukuran kecil secukupnya
- Garam dapur secukupnya

Langkah-langkah pembuatan :



1. Letakkan satu bongkah es batu ke atas piring
2. Letakkan ujung benang di atas permukaan es batu, kemudian taburkan sedikit garam di atasnya
3. Tunggu beberapa menit
4. Angkat benang tersebut
5. Amati apa yang terjadi pada benang dan es

Penjelasan :

Es batu akan terangkat oleh benang setelah ditaburi dengan garam dapur. Garam menyebabkan penurunan titik beku pada es batu sehingga bagian es batu yang ditetesi garam akan mencair kemudian membeku kembali pada suhu di bawah titik beku yaitu 0 derajat Celcius. Benang akan terperangkap di dalam es yang membeku.

Simulasi Macromedia Flash Player



Simulasi Perkaratan



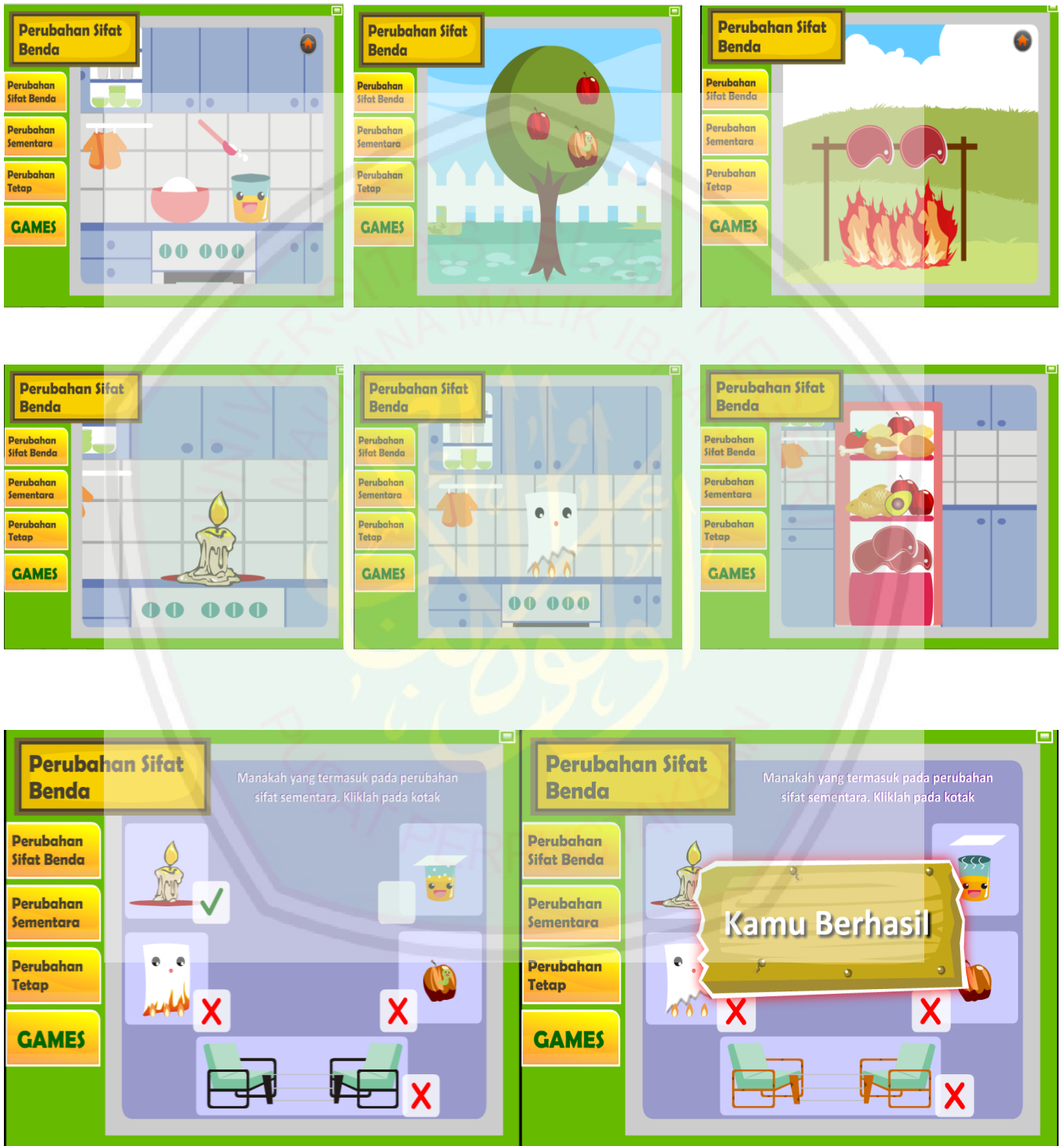
Simulasi perubahan Air menjadi bentuk padat, gas dan uap



Simulasi Perubahan pada kapur barus



SIMULASI LAINYA



Source: www.Indi smart.com

Video perubahan sifat benda



Quiz wonder Share

