An Analysis of the Use of English in Teaching Mathematics at the Second Grade of SMA Negeri 1 Krian Sidoarjo

THESIS

Submitted in partial fulfillment of the requirement for the degree of Sarjanah Pendidikan Islam (S.Pd.I) in Teaching English

By
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NIM D05207062

ENGLISH EDUCATION DEPARTMENT
FACULTY OF TARBIYAH
STATE INSTITUTE FOR ISLAMIC STUDIES
SUNAN AMPEL
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STATEMENT OF THE ORIGINALITY OF SARJANA THESIS

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He declares that the present Sarjana's thesis is an original research undertaken by the researcher mentioned above for the English Department, Tarbiyah Faculty, State Institute for Islamic Studies Sunan Ampel Surabaya. Any theories, findings, and research techniques not my own have been acknowledged in the text. Theoretical contributions and findings in this study are my own original work and have not been submitted for any degree in this or any other universities. If later it can be revealed that this Sarjana's thesis contains partly or wholly plagiarized others' intellectual work of any kind, I will readily accept the sanction established by the university on the matter.

Surabaya, 24th February 2012

The Statement Maker,

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ABSTRACT


Key Words: The use of English, non English subject matter, mathematics class of RSBI.

This research was a descriptive qualitative research. This research was done because there was the government regulation which sets international standard school program up in Indonesia. This judgment is caused many criticisms from many aspects. Concerning the school profile, the educator and student competence is required the consideration in constructing the program. Especially for the teachers who do not teach English subject matter. They have to use English instruction as a medium in teaching their subjects. Based on that problem, the researcher did a research on how the use of English in teaching non English subject matter at the second grade of SMAN 1 Krian Sidoarjo. At the same time, the researcher analyzed whether the English language instruction is reasonable to be implemented or not.

This research was taken in SMAN 1 Krian Sidoarjo, one of a pilot project of international standard school in Sidoarjo. The subject was the students of XI science 4. The class consisted of 39 students, 10 male and 29 female students. The researcher did this research in descriptive qualitative which was aimed to describe the implementation of using English as an instruction for teaching non English subject matter, it was in the form of descriptive qualitative. The data were collected by observation, interview and questionnaire. Then they were analyzed by using Milles and Huberman model which provides three steps, data reduction, data display and conclusion drawing or verification.

The result of this study showed that there were items providing positive effect in this implementation actually but there was an item that made this study was not reasonable to be conducted. The teacher only graduated from the program of bachelor degree. She has not achieved the program of master’s degree yet. In the regulation of national education article 78, 2009 mentioned that headmaster and educators must hold minimally master’s degree in their subject.
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CHAPTER I

INTRODUCTION

This chapter consists of the background of the study, the problems of the study, the objectives of the study, the significance of the study, the scope and the limitation of the study, and the definition of the key terms.

A. Background of the study

International standard school is craved by every country in this world. The schools which have fulfilled the indicators of international standard school will be able to produce good English competence and compete with other the developed countries. Therefore, the government policy in Indonesia tries to set up the program of international standard school.

SMAN 1 Krian is one of senior high schools in Sidoarjo. The learning in this school is supported by complete facilities such as mosque, MIPA laboratory, computer multimedia, language laboratory, library, garden hall, cooperative, canteen and commodious parking lot. SMAN 1 Krian also has been holding some extracurricular activities like sports, art, reciting holly Quran art, scouts, and youth red cross. The complete facilities and many extracurricular activities support the students in SMAN 1 Krian to be one of favorite senior high schools and the most favorite school in the sub district of sidoarjo.

As a favorite school, SMAN 1 Krian is selected by the policy of national education ministry. The result is that SMAN 1 Krian becomes a Pilot Project of International Standard School. As a Pilot Project of International Standard School, SMAN 1 KRIAN has run the school programs that are similar to the program of international standard school in general. Not only are good facilities available in the school but teaching all subjects in English also must be conducted perfectly, especially teaching science.
Up to now, there are three schools in Sidoarjo which have been pilot project of international standard school such as SMAN 1 Sidoarjo, SMA Muhammadyah 2 Sidoarjo, and SMAN 1 Krian Sidoarjo. At this point, the researcher chooses SMAN 1 Krian as the object of his research because of some reasons. SMAN 1 Krian which is being a pilot project of international standard school was established earlier than SMAN1 Sidoarjo and SMA Muhammadyah 2 Sidoarjo. SMAN 1 Sidoarjo became a pilot project of an international standard school in 2006 and SMA Muhammadyah 2 Sidoarjo was in 2008. SMAN 1 Krian Sidoarjo became an international standard school in 2009. In this condition, SMAN1 Sidoarjo and SMA Muhammadyah 2 Sidoarjo both have a better curriculum and program than those of SMAN 1 Krian Sidoarjo.

In addition, SMAN 1 Krian is located in rural area. The rural communities in which SMAN 1 KRIAN is located have a majority of lower-middle economic family. Most of them work as farmers, entrepreneurs even pedicab drivers. Such economic background influences most parents in that area in choosing SMAN 1 KRIAN as a school for their children.

On the other hand, the professional teachers of urban school like SMAN 1 Sidoarjo and SMA Muhammadiyah 2 Sidoarjo look more prominent than those in SMAN1 Krian Sidoarjo as a pilot project of international standard school. It is because as the requirement to become a pilot project of international standard school is that thirty percent of the teachers have to hold master’s degree in their studies.

Both schools had fulfilled the requirements of a pilot project of international standard school according to the department of national education because they have about thirty percent teachers who hold master’s degree. In SMAN1 Krian, the teachers are still on the process to fulfill the requirement of minister of national education as a pilot project of international
standard school.

English is easy for an English teacher when he or she teaches the lesson because an English teacher absolutely has expertise in teaching English. In this condition, the English instruction like pronunciation, grammar, language has to be implemented in the classroom. To be an expert in English, the teacher has to master the important skills: those are listening, speaking, reading, and listening. If he masters those skills, he will enjoy teaching and learning process.

As a pilot project of international standard school, all teachers are expected to be able to teach their subjects in English. Actually it will give a challenge for non-English teachers who try to teach their subjects in English in the classroom because English is as foreign language in Indonesia. Therefore, the teachers have to struggle to teach their lesson especially for non-English teacher.

English instruction must be conducted in all grades from the first to the third grade. However it is more likely to conduct English instruction in the second grade. There are some reasons of why the second grade becomes a choice.

The second class is considered capable and mature in learning by English instruction. It is because in the previous class, the students had been taught all subjects in English although it was not fully in English. The third grade should focus on final examination. So, English language instruction is more conducive and totally conducted to the second grade.

This study deems essential because as in the curriculum of the International Standard School in Indonesia, it is stated that English is used as the medium of instruction in teaching English, mathematics, science and technology, and it is used to communicate outside the class (Depdiknas, 2007). From this statement, the researcher argues that it seems difficult to conduct teaching all subjects and causes much argumentation. As we know that English is a foreign
language, not everybody masters English because mastering English will take time.

In this condition, the Indonesian teacher will face the difficulty in teaching their lesson in English, because most of Indonesian teachers do not have Basic English education. Moreover the student’s language proficiency levels are low.

Based on the reason stated above, the researcher will do a research on how the use of English in teaching Mathematics at the second grade of SMAN 1 Krian Sidoarjo. At the same time, the researchers will analyze whether the use of English is applicable to be implemented or not.

B. Problems of the study

Based on the background of the study above, the research questions of this study will be:

1. Is there any problem of using English to teach non English subject for the second grade students of SMAN 1 Krian Sidoarjo?
2. How do the students respond toward a non English teacher using English to teach her subject?

C. Objectives of the Study

1. To find out the problem of using English to teach non English subject for the second grade student of SMAN 1 Krian Sidoarjo.
2. To know the students respond toward a non English teacher using English to teach their subject.

D. Significance of the Study

The result of this study is expected to be of any use. They are both theoretical and practical purpose. Theoretically, the result of this research is expected more to motivate the teacher for teaching his subject matter in English especially mathematics.
Practically, this research is expected to be useful for the students, the researcher, the teacher, and the future researchers.

1. The students

This study is valuable for the students of SMAN 1 Krian because it will help them to get motivated and increase their English achievement. Then, they can use their English every time at their school.

2. The researcher

The result of this study is helpful to the researcher to find the knowledge more from the teacher, especially for new vocabularies in their specific subject like mathematics. In addition, this result of this study is to fulfill the requirement for getting bachelor degree in English education department at state institute of Islamic studies.

3. The teacher

This study is expected to give some essential information on using English for teaching mathematics especially for non English teacher like a mathematics teacher.

4. The future researchers

This research is useful for other researchers as reference to conduct research corresponding to similar problems, like the use of English for teaching non English subject matters.

E. Scope and Limitation

Based on the previous explanation in the background of the study, this research will be held in SMAN1 Krian Sidoarjo. This research discusses and focuses on using English for teaching non English subject matter.

The researcher chooses the second grade as the scope because the second grade is
considered more capable, mature and possible in learning mathematics in English than the first or third grades. This study is limited in data source by a mathematics class. In the same time, it focuses on knowing the use of English as an instruction for teaching mathematics for students of the second grade SMAN 1 Krian Sidoarjo.

F. Definition of Key Term

To avoid confusion over the title, it is necessary to explain the following terms:

1. Use : act of using something, state of being used.

2. Use of English: act of using English, state of being used.

3. Teaching: giving lesson to somebody.

4. Teaching mathematics: giving the mathematics lesson to somebody.

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2 Ibid, 455
CHAPTER II
REVIEW OF RELATED LITERATURE

This chapter presents review of related literatures. It covers the definition of school, indicators of international standard school, mathematics English vs. general English, strategies for teaching mathematics to limited English proficiency (LEP) students, and the review of previous study.

A. Definition of International Schools

In defining international school, there is a little differentiation before and after the implementation of the government legislation (PP) 17/2010 and the regulation of minister of national education (permendiknas) 18/2009. According to Mudarwan as an education analyst which was translated by the researcher,

“Before implementing that rule, an international school is the foreign school which is established by an organization based on the regulation in Indonesia. This regulation is to be applicable especially for foreigners who do not become a member of diplomatic and consular of other country in Indonesia. It is absolutely governed by a minister of national education in Indonesia.

After determining PP 17/2010 and permendiknas 18/2009, international school becomes collective educational institution. It means that international school is corporation between accredited institutions of foreign school education unit and education unit in Indonesia that is gotten an accreditation A.”¹

International standard school is a school which has fulfilled and passed all indicators of national standard of education that is enriched with good qualification of OECD member (Organization for Economic Co-operation and Development). Based on the regulation of minister of national education (permendiknas nomor 78 2009), the researcher has translated those indicators into English as stated below.²


B. Indicators of International Standard School

Fundamentally, the implementation of international standard schools overcomes the real issues or problems of how the schools enhance the quality of their graduates. (Permendiknas no. 78 years 2009) The regulation of minister of national education guides the schools to implement the national standard of education for increasing the quality of management and learning process with the indicators of pilot project of international standard school (RSBI) which absolutely agrees with the regulations of national standard. Realizing such educational expectation, the government determined various standards as (permendiknas no. 78 years 2009) the regulation of minister of national education below:

1. Standard of Competency

To fill the standard competency, there are some indicators which are achieved, such as:

a. The candidate students of senior high school have to obtain an international standard score, the average score of students' report book and school certificate is at minimum 7.5 score

b. Fulfilling the national standard of education that is fulling of outstanding graduates and the same quality with the OECD member or other developing countries.

c. Having the high competitiveness which is proved by school local quality at the international level.

d. Teacher candidates must have TOEFL score with IBT TOEFL score at minimum 75 as low advanced level.

e. Being active in maintaining the viability and world development in economic, sociology-culture and survival perspective.

f. Using and developing the communication and information technology professionally

July 30, 2011)
2. **Standard of Curriculum**
   
a. Applying the curriculum which is enriched with the standard of OECD member or other developed countries.
   
b. Applying semester credit units (SKS)

3. **Standard of Process**
   
a. Enriching the process standard with operating the learning model of OECD member and developed countries.
   
b. Learning process is based on communication and information technology (TIK).
   
c. Implementing teaching strategies that are communicative, active, creative, effective, enjoyable and contextual.
   
d. Leading the learners to increase their potential optimal in academic and non academic potential.
   
e. Giving face to face act, structured and unstructured assignment, and self-development act.
   
f. Enriching in competitive and collaborative activity
   
g. Enriching students’ competency in entrepreneur based on high morality and ethic.

4. **Standard of Administration Staff and Educators**
   
a. Reinforcing the competency of international standard school educator with the standard of OECD member or other developed countries.
   
b. Facilitating the learning process based on communication and information technology.
   
c. Leading educator to improve their ability in English proficiency or other foreign languages that are used in the international forum for certain subject matter except Indonesian, Islamic education, civic education, history education, and local content.
d. Headmaster and Educators have to reach at minimum 75 of IBT TOEFL score as the level of low advanced.

e. Headmaster and educators must hold minimally master’s degree in their subject.

f. Headmaster has competence in management, organization, leadership and entrepreneur.

g. The school is equipped with other standard of education staff for example a headmaster, librarian, laboratory staff, administration staff, cleaning service staff and security staff.

5. Infrastructure

a. Fulfilling the standard of infrastructure which is enriched by the standard of OECD member or other developed countries

b. Having the International standard school classrooms that are equipped with the infrastructure of communication and information technology (TIK).

c. Having library that is equipped with e-library

d. Having the infrastructure which is able to enhance and develop potency of educational staffs and learners.

6. School Management

a. Fulfilling the standard of school management which is enriched with the standard of OED member or other developed countries.

b. Using management system of ISO 9001 and last version of ISO 14000

c. Maintaining a healthy and clean environment, safe, orderly and conducive environment.

d. Creating the habits that is aimed at enhancing in English or other foreign languages
ability, communication and information technology and transnational culture.
e. Interlacing the partnership or relationship with leading school of local area or develop country.

7. School Finances
a. The school finance fulfills the standard of educational finance and implements financial management that is transparent and accountable.
b. Accepting a helping hand from the government.
c. Accepting the finance from the society.
d. Providing the scholarship for underprivileged learners who have good quality in academic at minimum 20 percent of all the candidates

8. School Assessment
a. Fulfilling the standard of school assessment which is enriched with the standard of OECD member or other developed countries.
b. Fulfilling the authentic assessment model and developing assessment model based on communication and information technology.
c. Implementing national exam.
d. Facilitating the learners to access an approved international certification or attend school final exam which is equivalent to OECD member or other developed countries.

C. Mathematics English vs. General English

Commonly English is an international language that almost everybody around the world can speak with. However, everybody uses English in many critical aspects. Comparing between English for mathematics and English subject, it causes the different meaning concept in its word. Susie W Hakansson, PhD said that there are some words which have different meaning when they
are constructed. For example:

1. Is a straight line a curve?
   a. English: a straight line is not a curve
   b. Mathematics: a straight line is the simplest example of a curve

2. What is a line?
   a. English: any line segment
   b. Mathematics: Line is an infinitive line

3. Multiplying
   a. English: repeated addition
   b. Mathematics: bigger, smaller, or neither

4. Dividing
   a. English: dividing is cut into pieces
   b. Mathematics: dividing is same multiplication (dividing by a non-zero number is multiplying by its reciprocal)

5. …or...
   Example: Do you want to drink Coffee or Tea?
   Are you coming or going?
   Was that your father or father-in-law?
   Do it now or later!
   a. English: or is becoming exclusive meaning
   b. Mathematics: by convention or is inclusive (“A or B” is true if A or B or both

---

is the case)

D. Strategies for Teaching Mathematics to Limited English Proficiency (LEP) student

Mathematics teacher, who provides English instruction to Limited English Proficient (LEP) student, has to ensure that his students are able to increase their learning while they are in the process of learning English. Thus, the teacher integrates the study of English vocabulary and grammatical structure while building the mathematical concept.

Jo Lynne De Mary, Ed.D. said that increasing comprehension and making mathematics more accessible to LEP students, teachers may want to use a variety of strategies:\n
1. Variety of strategies
   a. Classroom Management Strategies
   b. Create predictable classroom routines (starting class, collecting homework, and working in groups) so that LEP students will know what to expect.
   c. Use consistent formats for assignments, worksheets, and tests.
   d. Seat LEP students purposefully (near the teacher or next to a buddy).
   e. Foster an appreciation of and respect for cultural diversity among the students in the class.
   f. Write legibly and in print. Some LEP students may not be familiar with cursive and/or the Roman alphabet.
   g. Give directions step-by-step (orally and in writing) before assigning students to do independent, pair, or group work.
   h. Give LEP students more time to process questions and formulate an answer.

\n
1. Allow LEP students to talk to a peer in their native language when necessary to clarify understanding and clear up misunderstandings.

j. Keep picture dictionaries in the class and allow LEP students to use bilingual dictionaries.

2. Instructional Strategies that Increase Comprehension

a. Integrate Language and Content

i. Teach mathematical vocabulary (i.e., estimate, measure) and language structures daily.

ii. Teach students strategies to learn and study new vocabulary (i.e., vocabulary section in mathematics notebooks, class word wall, student-made bilingual dictionaries, and/or flashcards on spiral-bound index cards with definition, examples, word used in a sentence, picture/diagram, or a native language translation).

Sample flashcard:

<table>
<thead>
<tr>
<th>Word</th>
<th>definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>illustration</td>
<td>real world use</td>
</tr>
</tbody>
</table>

iii. Integrate the four language skill (listening, speaking, reading, and writing) into mathematics class.

iv. Model the process. Talk aloud while solving problems on the overhead or chalkboard to show the thinking process and common errors.

v. Have students explain their thinking process aloud to a classmate while solving a
problem.

vi. Integrate reading and writing through the use of journals, learning logs, poems, literature, etc.

vii. Give explicit instruction and practice in reading and writing word problems.

viii. Begin class with warm-up activities using mathematical language to give students practice in sentence construction.

ix. Post labels and vocabulary cards around the classroom on completed word problems, number lines, rulers, fraction diagrams, and/or objects in the class.

x. Have students paraphrase and write complex concepts in their own words (individually, pairs, or whole class).

xi. Review mathematical vocabulary and concepts using games.

b. Tap Prior Knowledge

i. Connect the students’ prior knowledge and experiences to new learning. Find out what students already know about a topic by making a semantic web on the board. Write the topic in the center of a circle and record students’ knowledge around it.

ii. Integrate the LEP students’ culture into lessons whenever possible.

iii. Begin a unit of study by eliciting students’ own questions about a topic.

c. Encourage Active Learning and Verbal Interaction

i. Design hands-on activities.

ii. Design meaningful and authentic collaborative activities to increase verbal interaction between students.

iii. Assign the roles to students in collaborative activities. Discover the strengths of LEP students and assign appropriate roles.
iv. Initiate the discussions that are based on real-world mathematical situations.

d. Teach Organizational Skills

i. Demonstrate how to read a mathematics textbook.

ii. Point out key sections and resources in the textbook.

iii. Teach students how to organize notebooks and binders and record homework assignments.

iv. Teach mnemonic devices that assist memorizing content.

v. Teach the study and test-taking skills.

vi. Teach note-taking skills. For beginner LEP students, copying notes is an effective way to begin learning writing conventions.

3. Assessment Strategies

a. Before Instruction

i. Use daily warm-up activities to assess mastery of concepts from the previous day’s lesson.

ii. Assess the LEP students’ knowledge before beginning a unit of study to learn where students have gaps in their learning and avoid unnecessary re-teaching of concepts. Some good techniques are semantic webbing and recording students’ comments on a KWL chart. Listed below is an example of a KWL chart.

<table>
<thead>
<tr>
<th>What Do You Know?</th>
<th>What Do You Want to Know?</th>
<th>What Did You Learn?</th>
</tr>
</thead>
</table>

b. During Instruction

i. Use a variety of assessment methods to measure English comprehension and mastery of concepts (drawings, charts, demonstrations, diagrams).
ii. Do quick checks for understanding every day (i.e., thumbs up/down, write answers on wipe boards at desks, hold up manipulative).

iii. Observe and record the LEP students’ participation in small group activities.

c. After Instruction

i. Find alternate ways other than written tests for LEP students to show their comprehension (i.e., oral tests, diagrams, drawings, demonstrations).

ii. Give LEP students (especially beginners) alternate ways to participate in whole-class discussions and respond to questions (think/pair/share, flashcards to raise over head, hand and/or body movements, individual chalkboards for solving computations).

iii. Assess whether LEP students have mastered mathematical concepts rather than their English grammar and fluency.

E. Complexity of Teaching Mathematics in English

A report prepared by an Australian Department of Education highlights the complexity of the language of Mathematics and Science. It states that the language of Mathematics is complex and is not similar to everyday language. It consists of specialist vocabulary, precisions and the use of symbols. Students learning Mathematics have to identify the word function before they are able to identify how mathematical problems can be solved. They also have to verbalize mathematics statements, putting words to symbols and graphs. They also have to work with lengthy descriptors and dense mathematical concepts.5

The report also states that teachers tend to make a lot of assumptions that students are

5 Faizah Mohamad Nor, Ph.D ETeMS: “The Implications on Learners”, (www.iium.edu.my/ilc.pdf, accessed on July 30, 2011)
able to understand the words despite the fact that the words are too complex for the students to deal with on their own. The report also states that language used for Science subjects comprises a large vocabulary of technical terms that have to be clarified to the students. In relation to the above, ETeMS training programs should not only focus on grading teachers’ language competency but should also focus on strategies to help teachers deal with the language complexity of Mathematics and Science.  

F. Review of Previous Studies

In the research, it is necessary to enclose review of previous studies to avoid replication. Some similar studies have been conducted to find out the reasonable of using English as an instruction for teaching non English subject matter. There are four previous studies about using English for teaching non English subject matter. The first previous study is by Rhoda Staceylyn Boyd Marr entitled “Teaching the Language of Mathematics to English Language Learners”. In her research she used the following questions as guide. What are the strategies for teaching the language of mathematics to all students? Can these strategies of the language of mathematics be utilized for ELL students? The researcher found that a common language is important to teach in any classroom. The researcher also found that some strategies such as autobiographies, journals, and other writing processes are more useful than others. The second most important teaching strategy for mathematics is discourse. In this study the researcher has detailed these strategies for use in the classroom.

The second research is by Peter Hudson entitled “Learning to Teach Science Using English as the Medium of Instruction”.

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6 Ibid.
7 Rhoda Staceylyn Boyd Marr entitled “Teaching the Language of Mathematics to English Language Learners” Thesis. Sierra Nevada College. 2010
8 Peter Hudson entitled “Learning to Teach Science Using English as the Medium of Instruction”. Thesis.
preservice teachers’ perception about their preparation for learning to teach science using EMI (English as the Medium of Instruction) at the conclusion of their first year of a new Bachelor of Education Studies (Primary Science) degree. Fifty preservice primary teachers at a Malaysian Institute of education had completed one semester of Malaysian units that Islamic and Asian Civilization, citizenship, strategy and innovative thinking in education, English for academic studies. The second semester comprised of four units, those are: the development technology of skill in information and communication technology, primary curriculum and pedagogy in health and physical education, English for teacher, and an integrated mathematics and science foundation unit to develop scientific and quantitative literary. Even though the first semester was taught in Melayu language, the second semester was delivered in English with all lectures, readings, workshops, and assessments conducted in English. This required lectures and preservice teachers to use English as the target language.

The third research is by Theresa Perez entitled “The Learning of Mathematics for Limited English Proficient Learner.” This study focused on theoretical and applied models of teaching and learning mathematics for English as Second Language Learners. Research and current practice were reviewed with an emphasis on the design, implementation, and assessment of instruction for this population of learners. A qualitative analysis of students’ final research projects using narrative analysis methodologies showed that students (1) position issues within a larger socio cultural framework (2) advocate for the negotiation of pedagogical principles that blend language learning strategies with effective mathematics pedagogy and (3) identify assessment policies and processes that were supportive and limiting for these learners.

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Queensland: Queensland of University of Technology 2009

The fourth research is by Muhammad Islahudin entitled “Teacher – Talk in Giving Information in RSBI physics Class at SMPN 3 Malang.” This study is an attempt to answer two main questions: (1) what types of information were given by the teacher in the process of teaching and learning Physics in RSBI class at SMPN 3 Malang based on the giving-information category of teacher-talk in the FLINT model? (2) What methods were used by the teacher in delivering the information in the process of teaching and learning Physics in RSBI class at SMPN 3 Malang based on the giving-information category of teacher-talk in the FLINT model?.

The main data of the study are the utterances produced by the teacher in giving information to the students. The main data were taken during the teaching-learning process in the class. These main data were collected through observation and recording the teacher talk in giving information in four meetings. To support the main data, secondary data were also collected through an interview with the Physics teacher and a student questionnaire. The data analysis was done in four steps, namely: data collection, data reduction, data display, and conclusion drawing.

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CHAPTER III
RESEARCH METHODOLOGY

This chapter consists of some principle components of the research methods used in this research. They are research design, subject of the study, instrument and data collection technique, and data analysis.

A. Research Design

In this study the researcher uses descriptive qualitative research; this research could be said as descriptive because this research gives us the description about condition, situation and natural setting. According to Bogdan and Biklen which is cited by Sugiyono (1982),

“There are some characteristics for descriptive research, such as:
a. Qualitative research has the natural setting as the direct source of data researcher is the key instrument
b. Qualitative research is descriptive. The data collected is in the form of word of picture of rather than number.
c. Qualitative research is concern with process rather than simply with outcomes or product.
d. Qualitative research tends to analyze their data inductively.
e. “Meaning” is essential to the qualitative approach.”

Learning in SMAN I Krian becomes the setting of the study. The researcher did not add and reduce anything from the process, the researcher intends to get information of the process in natural setting then described them. When the study is aimed to describe the implementation of using English as an instruction for teaching non English subject matter, it is in the form of descriptive qualitative.

B. Subject of the Study

The subject of this research is the eleventh grade student of SMA NEGERI 1 KRIAN SIDOARJO. Actually, there are seven classes of eleventh grade, one class of social major,

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five classes of science major, and one class of language major. The researcher only chose one major of those majors. That is a science major, because the English instruction is conducted fully in science major. The class consisted of 39 students.

C. Instrument and Data Collection Technique

In the qualitative research, the researcher is the key instrument of this research. The researcher is the only one who becomes an instrument or the device of research. According to Lincoln and Guba which was cited by Sugiyono,

“The instrument of choice in naturalistic inquiry is the human. We shall see that other forms of instrumentation may be used in letter phases of the inquiry, but the human is the initial and continuing mainstay. But is the human instrument has been used extensively in earlier stages of inquiry, so that an instrument can be constructed that is grounded in the data that the human instrument has product.”

For conducting the research, the researcher uses some of data collection techniques. They are: observation, interview, questionnaire and documentation.

1. Observation

Observation is the primary technique which is going to be used by the researcher to collect the data about English as the medium of instruction used by non English teacher to answer the research question number one.

According to Sanafiah Faisal which is cited by Sugiyono, “There are three kinds of observation; those are participant observation, overt and covert observation, and unstructured observation”. Furthermore, according to Spradley, “participation observation is divided by four points; there are passive participation, moderate participation, active participation, and complete participation.”

In this study, the researcher acts as passive participation. When the researcher is being as an observer, the researcher has a board of that is observed. It means that the researcher does not take a part of learning when the teacher teaching the subject. It is used to recognize and observe

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2 Ibid, page 223.
3 Ibid, page 226.
the condition of the class, how the teacher carries out the lesson, the teacher’s strategies that are used, the teacher’s problem in speaking, the students’ difficulty and response to the teacher’s explanation.

Based on this technique, the researcher obtains unclear information which is reasonable to be implemented in the classroom. Furthermore, this research is going to be composed fully and clear by supporting techniques beneath. The aim of using this technique is to obtain the data about the use of English as an instruction for teaching non English subject matter.

2. Interview

For obtaining the data, the researcher makes questions while using face-to-face action to the respondent. According to Moh.Nazir, “interview is the inquiry process of getting information which is conducted by interaction and face-to-face act between the researcher and the respondent.”

It is used to get the accurate data and to support observation conducted previously. Susan Stainback which is cited by sugiyono said that, “Interviewing provides the researcher a means to gain a deeper understanding of how the participation interprets a situation or phenomenon than can be gained through observation.”

In this opportunity, the students become interviewee of this technique. The result of using this technique is to obtain the information about English language instruction used by non English teacher to answer the research question number one.

3. Questionnaire

Questionnaire as documents asking some questions all individuals in the sample. The researcher uses questionnaire to know the problem of student. According to Moh Nazir,

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“Questionnaire is a set of questions that are logically related to the research problem, every question is the answers which have meaning in examining hypothesis.”

In this case, the question is given to English students in order to know the students’ responses concerning the use of English as the medium of instruction of non English subject matter.

4. Documentation

Documentation purposes to support the result of observation and interview in qualitative research. According to Bogdan, “In most tradition of qualitative research, the phrase personal document is used broadly to refer to any first person narrative produced by an individual which describes his or her own actions, experience and belief”.

In this case, documentation is used for collecting the data about the research question number one which is showed by lesson plan documentation and the research question number two which is showed by the score of assignment.

D. Data Analysis

In this study, the researcher uses Milles and Huberman model. According to Milles and Huberman which was cited by Sugiyono,

“The qualitative data analysis is conducted interactively and continuously up to the completion of data. There are three steps of this model: data reduction, data display, and conclusion drawing/verification.”

For the first step is data reduction. In this step, all data which are collected as many as possible by research techniques, are noted and rechecked accurately and carefully. From these data, the researcher reduces, chooses data and focuses on the same theme. By characterizing and grouping the data, the researcher finds the outlined data.

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6 Moh.Nazir, Metode Penelitian (Bogor: Ghalia Indonesia, 2005), page 203.
7 Sugiyono, Metode Penelitian Kantitatif Kualitatif dan R&D,(Bandung: CV AFABETA,2009), page 240.
The second step is data display. In this step, the researcher displays the data with chart or tabular and narrative text. According to Milles and Huberman which was cited by Sugiyono, “The most frequent form of display data for qualitative research data in the past has been narrative text, graph, metric, network and chart.”

In this condition, the researcher uses percentage of student’s responses to support this analysis easily. The percentage of student’s responses is acquired by the division between respondent answer and the number of respondent, then it times 100%. This step is in order to know the most qualified data and the unqualified data.

The last step is conclusion drawing/verification. After conducting those steps above, the researcher draws the conclusion of the data. The data is described and written on the research paper. The aim of this step is to obtain the reasonable of the use of English as the medium of instruction of non English subject matter.

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9 Ibid, page 249
CHAPTER IV

RESEARCH FINDINGS AND DISCUSSION

This chapter focuses on presenting the research findings and discussion on the basis of the result of data analysis. In other words, it presents the answer of the research questions.

A. Research Findings

The research findings of this study presents the profile of school, teacher, the statement of the teaching problems, and students’ responses which is included an analysis on the use of English as the medium of instruction of non English subject for students of the eleventh grade of SMAN 1 Krian.

1. School Profile

SMA Negeri 1 Krian is located in Soenandar Priyosudarmo street no.05 Krian Sidoarjo and lies on 14,442 square meters. Buildings of SMA Negeri 1 Krian were two floors, consist of 33 classrooms, 6 laboratories (language laboratory, Multimedia laboratory, Computer laboratory, Science laboratory, Chemical laboratory, and Biology laboratory), a conventional library, 8 offices (the Principal office, the Vice principals office, the administration office, the financial office, the school health unit, the guidance and counseling room, the guest room, and the teacher’s room), the auditorium with a capacity of about 400 people, seven canteens, a mosque, a Student Council room (OSIS), separate bathrooms for male and female teachers, and 18 separate bathrooms for male and female students.

As an effort to improve education and learning service, SMA Negeri 1 Krian Sidoarjo has been equipped for representative learning facilities. All classes are equipped with air conditioners. Besides tables and chairs, the classes are also equipped with multimedia facilities (LCD projectors, internet Wi-Fi, and computer). All laboratories have been equipped with
adequate equipments and materials for lab activities for students and teachers. They are also provided LCD projector, internet Wi-Fi, and computer. Library is equipped with a wide variety of books and references that are adequate and sufficient for students and teachers. In addition, it is also equipped by a digital library that allows any user to search various books and information needed. Various means in the form of instructional media have been created and developed by teachers of SMA Negeri 1 Krian Sidoarjo

2. Teacher Profile

In SMAN 1 Krian Sidoarjo there are four mathematics teachers. Ms. Sayeki Reni W S.Pd is one of the mathematics teachers in that school. She holds a bachelor degree in mathematics education. When she was in junior high school of SMAN 1 Kertosono Nganjuk, she was interested in studying English and mathematics lesson. Both of them were her favorite lessons.

To improve her English, while she was studying mathematics in the university, she studied English by taking a course at English First (EF) for four months. She was able to learn English even though she had to focus on studying mathematics in the university.

She has been a mathematics teacher for more than 20 years. Recently, She seldom learns English. In 2006 she heard information that SMAN 1 Krian will be a pilot project of international standard school. After getting that information, she got a challenge to learn English. At the moment, she bought some mathematic books which are written in English. She tried to understand the mathematics English deeply.

She was born in October 1957. She is 54 years old now. However, she is still enthusiastic in learning English even though she gets older than her age. When SMAN 1 Krian became a pilot project of international standard school in 2009, she got an English course from the school program. In addition, she has some specialist teachers for supporting her speaking. He is Mr.
Abadi who graduated from one of the universities in the U.S. who is a science lecturer at Airlangga University Surabaya. Her daughter and brother who are English teachers in Bali become her consultants. They are her motivators when teaching mathematics in English. Therefore, the age is not an obstacle to learn the knowledge anymore. She struggles in learning English in her age.

3. Teaching's Problem

The researcher presented the teaching’s problems which were obtained from the interview with the mathematics teacher, observation and documentation of the lesson plan at SMAN 1 Krian Sidoarjo. The interview was done by the researcher on 10th of August 2011 after the observation had been conducted on 20th of July up to 10th of August 2011. Moreover, the documentation was collected on 20th of July 2011. This study found some points related to the teaching’s problems below.

They were lesson plan, conveying the lesson, establishing communication, and leading discussion. The data of lesson plan was obtained from documentation. The data of conveying the lesson, establishing communication and leading discussion were obtained from the observation and the interview with the teacher.

a. Lesson plan

On 20th of July 2011 the data of lesson plan was obtained from documentation which was constructed in English instruction. It was made by the mathematics teacher to teach the lesson as the reference of teaching Mathematics. In the process of teaching mathematics, she used the lesson plan to teach her lesson even though sometimes it did not conduct perfectly.
From the teacher’s answer through the interview, it is known that the teacher did not get the difficulty in developing the lesson plan. She was able to develop it because she was active asking to her daughter and teachers when she found some problems in developing the lesson plan.

b. Conveying the lesson

From the class observation, it is known that the teacher applied the “Advance Mathematical Concept pre calculus with Application” as an international standard textbook. The book is written in English. There are good and clear explanation to understand the subject. That book provides some good presentations that have the differences from other mathematics source books. The teacher’s book is also available consist of true story examples in teaching technique for the teacher and English Vocabulary for international standard of mathematics.

In the learning process, the teacher did not explain the lesson in English. Instead, she asked the students to read the book and discussed together what in the book. When explaining the lesson, she used simple language and clear explanations. She found it difficult when constructing the complex sentences. The teacher was likely to use simple, clear and systematic explanation.

Explaining the lesson in English was suggested in the classroom, but the teacher did not explain it totally in English. It happened in the first semester in which English was not used as the medium of teaching other subject and still influenced in the first grade. In this condition, the teacher used simple English for about seventy percent.

When the students got the difficulty to understand the meaning, the teacher began to discuss or ask the students, to look up the word in the dictionary and translate them into

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Interview, Wednesday, 10th August 2011 at 10.00 am.
Indonesian. Sometimes the teacher used Indonesian language when it is needed. She thought that “Comprehension in learning mathematics is more important than explaining in English which makes the students confused.”

From the teacher’s answer through the interview, it is known that the teacher found a little problem in her teaching. However, she mostly enjoyed teaching mathematics in English because she was very struggling in learning English. She only found some problems when constructing the complex sentences but it could be solved by consulting to the expert before teaching the lesson.

c. Establishing communication

Establishing communication is implemented after explaining or conveying the lesson has been done. Based on the class observation, it is known that teacher establish communication with the students by giving some examples of question. The teacher asked the students to answer the question in front of the classroom. As usually, teacher avoids using complex sentences that make her difficult, but she kept trying. When finding the problem, she asked to the other teachers at home or the English teacher at school.

In the classroom, she communicated clearly and used simple language. She repeated the English twice. If the students did not understand the meaning of certain words she would begin to translate into Indonesian.

From the teacher’s answer through the interview, it is known that in establishing communication, the teacher had the same problem with conveying the lesson. She said that she enjoyed establishing communication in the classroom but she got the problem in

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2 Interview, Wednesday, 10th August 2011 at 10.00 am.
3 Ibid.
4 Ibid.
developing complex sentences. She avoided it by using simple sentences and asked to the English expert after class.

d. Leading discussion

Leading discussion was implemented after communicating with the students had been done. Before leading discussion, the teacher provided the question by dictating slowly and clearly.

When dictating questions was finished, the teacher asked the students to discuss with their friends next to them. After that, the teacher began to lead the discussion among the students. Based on the researcher’s observation through observation sheet, it is known that the teacher used simple language and clear explanations. As in establishing communication, the teacher sometime avoided to constructs long sentences. She used simple language like ordering, asking, and permitting and so on.

In leading discussion, the teacher gave the equal right to every student. It was because the students were able to be restrained well and they were able to enjoy joining the discussion in the classroom. In addition, the teacher gave feed back to the student at the end of the lesson. It had the purpose that they would have more understanding in their lesson and the conviction of learning mathematics was more unwavering.

From the teacher’s answer through interview\(^5\), the teacher gave the same answer like the answer from the interview sheet in conveying the lesson and establishing communication. That is she got the problem when she faced in instructing long sentences. Even though she was quite old woman, she still had spirit and struggled to learn English and solve the problem when she got difficulty in her teaching.

\(^5\) Ibid.
4. Students’ response

The researcher presented the student’s responses that were obtained from the questionnaire, observation and documentation at SMAN 1 Krian Sidoarjo. The questionnaire was done by the researcher on 15th of August 2011 after the observation had been conducted on 20th of July up to 10th of August 2011. And the documentation was collected on 15th of August 2011. This study found some points related to the problem of teaching below.

They were student’s convenience, students’ comprehension, students’ passion and students’ score. The data of students’ convenience, comprehension and liveliness were obtained from observation and questionnaire. The data of students’ score was obtained from documentation.

a. Students’ convenience

Based on the class observation, it is known that the students’ convenience was clearly visible when they felt comfortable in the classroom. It was able to emerge some points. Their facial expression could indicate whether they enjoy the class or not. When the learning was taking place, they showed positive facial expression. It could be showed from their smile when learning in the classroom.

In addition, the sitting position and their behavior showed the students’ convenience. When the learning was happening, they showed positive behavior in the classroom. They could receive the lesson when the teacher taught them. They enjoyed in the classroom. Thus the students gave the positive response in the learning process.

The students’ answer in the questionnaire could be showed on the table below.
TABLE 4.1 STUDENTS’ RESPONSES TO THE TEACHER WHEN CONVEYING THE LESSON (NUMBER 2 OF QUESTIONNAIRE)

<table>
<thead>
<tr>
<th>Q.2</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The teacher when conveying the lesson</td>
<td>Very comfortable</td>
<td>1</td>
<td>3,13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>comfortable</td>
<td>25</td>
<td>78,13</td>
</tr>
<tr>
<td></td>
<td></td>
<td>uncomfortable</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>very uncomfortable</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on the table, 25 of 32 students (78,13%) answered that they felt “comfortable” when the teacher was delivering mathematics lesson in English, 6 students (18%) answered that they felt “uncomfortable” when the teacher is conveying the lesson, and one student (3,13%) answered that they felt “very uncomfortable”

TABLE 4.2 STUDENTS’ RESPONSES TO THE TEACHER WHEN DELIVERING THE LESSON (NUMBER 4 OF QUESTIONNAIRE)

<table>
<thead>
<tr>
<th>Q.4</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The teacher when delivering the lesson</td>
<td>Very happy</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Happy</td>
<td>19</td>
<td>59,38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Unhappy</td>
<td>13</td>
<td>40,63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very unhappy</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Based on the table, 19 of 32 students (59.38%) answered that they were “happy” when the teacher was teaching the mathematics lesson in English, and 13 students (40.63%) answered that they were “unhappy” when the teacher is conveying the lesson.

**TABLE 4.3 STUDENTS’ RESPONSES TO THE ENGLISH SUBJECT IN THE SCHOOL (NUMBER 5 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.5</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The English subject in the school</td>
<td>Very pleased</td>
<td>5</td>
<td>15.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pleased</td>
<td>19</td>
<td>59.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>displeased</td>
<td>5</td>
<td>15.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>very displeased</td>
<td>3</td>
<td>9.38</td>
</tr>
</tbody>
</table>

Based on the table, 19 of 32 students (59.38%) answered that they were “pleased” about the English subject in the school, 5 students (15.63%) answered that they were “very pleased” with the English lesson in the school, 5 student (15.63%) answered that they were “unpleased”, and 3 students (9.38%) answered disagree that they were “very unpleased”.

Therefore, from the result of students’ answer in the questionnaire about students’ convenience the researcher can conclude that:

1) The students felt comfortable when the teacher was delivering mathematics lesson in English instruction.

2) The students were happy when the teacher was teaching mathematics lesson in English.

3) The students were pleased with the English lesson in their school.
Based on three statements above, the researcher concluded that the students gave positive responses to the convenience in the classroom. They felt convenient, happy, and pleased when the teacher was conveying the mathematics lesson in English instruction.

b. Students’ comprehension

From the researcher’s observation, it is known that the students’ convenience indicated the positive response, their positive response foster the students’ comprehension. It means that the students were capable to understand the lesson which was implemented by the teacher. The students could answer the questions that were given and also they were able to do the assignment perfectly.

The students’ answer in the questionnaire could be showed on the table below.

**TABLE 4.4 STUDENTS’ RESPONSES TO THE LESSON TAUGHT BY THE TEACHER. (NUMBER 3 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.3</th>
<th>Statement of students’ response to the lesson taught by the teacher</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Very understandable</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Understandable</td>
<td>19</td>
<td>59.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>confusing</td>
<td>12</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>very confusing</td>
<td>1</td>
<td>3.13</td>
</tr>
</tbody>
</table>

Based on the table, 19 of 32 students (59.38%) answered that the lesson was “understandable”, 12 students (37.5%) answered that the lesson was “confusing”, and one student (3.13%) answered that the lesson was “very confusing”.
TABLE 4.5 STUDENTS’ RESPONSES TO MATHEMATICS ENGLISH VOCABULARY (NUMBER 6 OF QUESTIONNAIRE)

<table>
<thead>
<tr>
<th>Q.6</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The mathematics English vocabulary</td>
<td>Very easy</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>easy</td>
<td>4</td>
<td>12,5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>difficult</td>
<td>28</td>
<td>87,5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>very difficult</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on the table, 28 of 32 students (87.5%) answered that they felt “difficult” when finding the mathematics English vocabulary in the classroom, and 4 students (12.5%) answered that they felt “easy” when finding the English mathematics vocabulary in the classroom.

TABLE 4.6 STUDENTS’ RESPONSES TO THE TEACHER’S SPEAKING WHEN COMMUNICATING WITH HER (NUMBER 10 OF QUESTIONNAIRE)

<table>
<thead>
<tr>
<th>Q.10</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The teacher’s speaking when</td>
<td>Very understandable</td>
<td>1</td>
<td>3.13</td>
</tr>
<tr>
<td></td>
<td>communicating with her</td>
<td>Understandable</td>
<td>18</td>
<td>56.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confusing</td>
<td>12</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very confusing</td>
<td>1</td>
<td>3.13</td>
</tr>
</tbody>
</table>
Based on the table, 18 of 32 students (56.25%) answered that the teacher’s speaking was “understandable” when communicating with her, 12 students (37.5%) answered that the teacher’s speaking was “confusing” when communicating with her, one student (3.13%) answered that the teacher’s speaking was “very understandable”, and one student (3.13%) answered that the teacher’s speaking was “very confusing” when communicating with her.

**TABLE 4.7 STUDENTS’ RESPONSES TO THEIR FRIENDS’ SPEAKING WHEN COMMUNICATING WITH THEM. (NUMBER 12 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.12</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Their friends’ speaking when communicating with them</td>
<td>Very understandable</td>
<td>2</td>
<td>6.25</td>
</tr>
<tr>
<td></td>
<td></td>
<td>understandable</td>
<td>22</td>
<td>68.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confusion</td>
<td>7</td>
<td>21.88</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very confusion</td>
<td>1</td>
<td>3.13</td>
</tr>
</tbody>
</table>

Based on the table, 22 of 32 students (68.75%) answered that their friends’ speaking was “understandable” when communicating with them, 7 students (21.88%) answered that their friends’ speaking was “confusing”, 2 students (6.25%) answered that their friends’ speaking was “very understandable”, and One student (3.13%) answered that their friends’ speaking was “very confusing” when communicating with them.

Therefore, from the result of students’ answer in the questionnaire about students’ comprehension the researcher can conclude that:

1) The lesson was understandable by when the lesson is taught by the teacher.

2) They felt “difficult” when finding the mathematics English vocabulary in the
classroom.

3) The teacher’s speaking was “understandable” when communicating with her
4) Their friends’ speaking was “understandable” when communicating with them.

Based on the four statements above, the researcher concluded that most of the students gave good responses to the use of English in the classroom. However, there was an aspect showed that the students felt difficult when finding new vocabulary of mathematics English. It could be solved by the students’ passion like looking up the word in the dictionary and asking to other friends. Therefore they had good understanding of English in the classroom.

c. Students’ passion

Students’ passion would be achieved in the learning process if the students felt convenient with the lesson. In this condition, from the researcher’s observation, it is known that the students immediately ask question when facing the difficulties. They thought that they needed to understand the vocabulary that they do not understand. Improving the students’ passion was emerged when the students had a discussion with their friends.

The students will help each other if they have problem in understanding the vocabulary and then discuss together. In addition, students’ active participation had been seen in the classroom when the teacher gave the questions to the students, they struggled to answer those questions. Therefore, the students’ passion is going well in the classroom.
The students’ answer in the questionnaire could be shown on the table below.

**TABLE 4.8 STUDENTS’ RESPONSES TO THE FREQUENCY OF ASKING QUESTION ABOUT MATHEMATICS ENGLISH VOCABULARY (NUMBER 7 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.7</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The frequency of asking question about mathematics English vocabulary</td>
<td>Often</td>
<td>5</td>
<td>15.63</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sometimes</td>
<td>19</td>
<td>59.38</td>
</tr>
<tr>
<td></td>
<td></td>
<td>seldom</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Never</td>
<td>2</td>
<td>6.25</td>
</tr>
</tbody>
</table>

Based on the table, 19 of 32 students (59.38%) answered that they “sometimes” asked question about mathematics English vocabulary, 6 students (18%) answered that they “rarely” asked question about mathematics English vocabulary, 5 students (15.63%) answered that they “often” asked question about mathematics English vocabulary, and 2 students (6.25%) answered that they “never” asked question about mathematics English vocabulary.

**TABLE 4.9 STUDENTS’ RESPONSES TO THE FREQUENCY OF LOOKING UP THE DIFFICULT WORD IN THE DICTIONARY (NUMBER 8 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.8</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The frequency of</td>
<td>Often</td>
<td>5</td>
<td>15.63</td>
</tr>
</tbody>
</table>
Based on the table, 15 of 32 students (46.88%) answered that they “sometimes” looked up the difficult word in the dictionary, 7 students (21.88%) answered that they “rarely” looked up the difficult word in the dictionary, and 5 students (15.63%) answered that they “often” looked up the difficult word in the dictionary, and 5 students (15.63%) answered that they “never” looked up the difficult word in the dictionary.

**TABLE 4.10 STUDENTS’ RESPONSES TO THE FREQUENCY OF COMMUNICATION IN ENGLISH WITH THE TEACHER (NUMBER 9 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.9 Statement of students’ response about</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The frequency of communication in English with the teacher</td>
<td>Often</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>seldom</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>10</td>
<td>31.25</td>
</tr>
</tbody>
</table>

Based on the table, 16 of 32 students (50%) answered that they “rarely” communicated in English with the mathematics teacher, 10 students (31.25%) answered that they “never” communicated in English with the mathematics teacher, and 6 students (18%) answered that they sometimes communicated in English with the mathematics teacher.
### TABLE 4.11 STUDENTS’ RESPONSES TO THE FREQUENCY OF COMMUNICATION IN ENGLISH WITH THEIR FRIENDS (NUMBER 11 OF QUESTIONNAIRE)

<table>
<thead>
<tr>
<th>Q.11 Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The frequency of communication in English with their friends</td>
<td>Often</td>
<td>1</td>
<td>3.13%</td>
</tr>
<tr>
<td></td>
<td>Sometimes</td>
<td>20</td>
<td>62.5%</td>
</tr>
<tr>
<td></td>
<td>Seldom</td>
<td>10</td>
<td>37.5%</td>
</tr>
<tr>
<td></td>
<td>Never</td>
<td>1</td>
<td>3.13%</td>
</tr>
</tbody>
</table>

Based on the table, 20 of 32 students (62.5%) answered that they “sometimes” communicated with their friends in English, 10 students (31.25%) answered that they “rarely” communicated with their friends using English, one student (3.13%) answered that they “often” communicated with their friends, and one student (3.13%) answered that they “never” communicated with their friends.

Therefore, from the result of students’ answer in the questionnaire about students’ passion the researcher can conclude that:

1) They sometimes asked question about mathematics English vocabulary.
2) They sometimes looked up the difficult word in the dictionary.
3) The students rarely communicated with the mathematics teacher in English.
4) The students sometimes communicated with their friends in English

Based on the four statements, the researcher concluded that most of the students gave good responses about their passion in the classroom. However, there was an aspect
that they rarely communicated with the mathematics teacher using English instruction. It was because they were in the first semester of second grade and they were not habitually familiar with the teacher. The teacher said that it needed adaptation and process. They will be familiar with English next time. Therefore the students were active in learning mathematic in English.

d. Students’ score

From the researcher’s observation, one of students said that learning mathematics in English seem difficult at first. However, when learning process began, it was not like what it seems to be. The learning process was running well. It was proven by the result of assignment. It could influent the score of student assignment. Most of the students got better score after doing exercises.

The list of students’ score and the students’ answer in the questionnaire could be provided on the table below

**TABLE 4.12 STUDENTS’ RESPONSE TO THE INFLUENCE OF LEARNING MATHEMATICS IN ENGLISH ON STUDENTS’ SCORES (NUMBER 13 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.13</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The influence of learning mathematics</td>
<td>Very much</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>English on students’ score</td>
<td>Much</td>
<td>20</td>
<td>62.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Little</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Very little</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Based on the table, 20 of 32 students (62.5%) answered that learning English mathematics influenced their score “much”, 6 students (18%) answered that learning English influenced their score “very much”, and 6 students (18%) answered that learning English influenced their score little.

**TABLE 4.13 STUDENTS’ RESPONSES TO THE MATHEMATICS SCORE OF THE EXERCISES (NUMBER 14 OF QUESTIONNAIRE)**

<table>
<thead>
<tr>
<th>Q.14</th>
<th>Statement of students’ response to</th>
<th>Option</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>The score of the mathematics</td>
<td>Excellent</td>
<td>26</td>
<td>81.25</td>
</tr>
<tr>
<td></td>
<td>exercises</td>
<td>Very good</td>
<td>6</td>
<td>18.75</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Good</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fair</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Based on the table, 26 of 32 students (81.25%) answered that they were “excellent” in the mathematics exercises, 6 students (18.75%) answered that they were very good in the mathematics exercises.

Therefore, from the result of students’ answer in the questionnaire about students’ score the researcher can conclude that:

1) Learning English mathematics influenced their score much.

2) They were excellent in the mathematics exercises

**TABLE 4.14 THE LIST OF STUDENTS’ SCORE**

<table>
<thead>
<tr>
<th>No</th>
<th>Name</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>AXELINO MUHAMMAD GHAZAIN</td>
<td>80</td>
</tr>
<tr>
<td></td>
<td>Name</td>
<td>Score</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------</td>
<td>-------</td>
</tr>
<tr>
<td>2</td>
<td>ROSI CHOIRUN NISA’</td>
<td>65</td>
</tr>
<tr>
<td>3</td>
<td>ANDI TIARA PUSPITA SARI</td>
<td>88</td>
</tr>
<tr>
<td>4</td>
<td>AYU LUTHFIYAH PURNAMASARI</td>
<td>80</td>
</tr>
<tr>
<td>5</td>
<td>M. NOVA ARIEF VIANNTO</td>
<td>80</td>
</tr>
<tr>
<td>6</td>
<td>RISKA DESERA APRAYANA</td>
<td>90</td>
</tr>
<tr>
<td>7</td>
<td>RISQI NUR ALIFIAN</td>
<td>65</td>
</tr>
<tr>
<td>8</td>
<td>YUANITA WAHYUNINGSIH</td>
<td>95</td>
</tr>
<tr>
<td>9</td>
<td>EKA MAYLUNA KENCANA</td>
<td>98</td>
</tr>
<tr>
<td>10</td>
<td>RIMA WIDYA MONICA</td>
<td>98</td>
</tr>
<tr>
<td>11</td>
<td>SILVIA NUR LAILI</td>
<td>80</td>
</tr>
<tr>
<td>12</td>
<td>DENDI VIO ANGGRIATAMA</td>
<td>80</td>
</tr>
<tr>
<td>13</td>
<td>M. RIZAL ARDHIANSYAH</td>
<td>80</td>
</tr>
<tr>
<td>14</td>
<td>VALDA TEORINTINA GORETTI</td>
<td>95</td>
</tr>
<tr>
<td>15</td>
<td>WINDA EKA PRATIWI</td>
<td>98</td>
</tr>
<tr>
<td>16</td>
<td>ELYVIA RODESTA WIDI Y</td>
<td>80</td>
</tr>
<tr>
<td>17</td>
<td>SHERIHAN WARDANI AL GIARTO</td>
<td>65</td>
</tr>
<tr>
<td>18</td>
<td>BIRLYAN IRWAN ADINATA</td>
<td>98</td>
</tr>
<tr>
<td>19</td>
<td>EKA SAVINATUN NAJAH</td>
<td>85</td>
</tr>
<tr>
<td>20</td>
<td>LESTI PERMATASARI</td>
<td>80</td>
</tr>
<tr>
<td>21</td>
<td>ROSALIA FRISKA ANANDA</td>
<td>100</td>
</tr>
<tr>
<td>22</td>
<td>SEPTRIA FATHIMAH AZ-ZAHRO</td>
<td>90</td>
</tr>
<tr>
<td>23</td>
<td>DENNES FRANSISCA</td>
<td>98</td>
</tr>
<tr>
<td>24</td>
<td>FRIMA SEPTYAWAN NUR RAHMAN</td>
<td>85</td>
</tr>
</tbody>
</table>
The standard score of mathematics in SMAN 1 Krian is 7.5. Based on the table, 5 of 32 students got the score under the standard score of mathematics. 27 students got the score beyond the standard score of mathematics.

Based on the two statements of students' responses and the list of students’ score above, the researcher concluded that the students gave good positive response to the lesson. They felt that learning mathematics English gave effect positive toward their score. It is indicated by their good scores.

B. Discussion

The discussion of this study is about the result of research finding.

1. The school is in the process of meeting the qualification of OECD (Organization for Economic Co-operation and Development)

Teaching subject matter in English actually needs good English proficiency. From this opportunity, the quality of Indonesian school is expected to be equivalent with the school quality of developed country or OECD member. Furthermore, it is expected that the rising of students’ English proficiency which rounds into international language.
From these cases, the minister of national education guided the school to implement the standard of national education for increasing the quality of management and learning process using the indicators of pilot project of international standard school (RSBI). As a pilot project of international standard school, SMAN 1 Krian applies the various standards as the qualification of OECD member or developed country.

From the school profile explained previously, it indicated that mostly the school has been applying the indicators of international standard school pilot project that has been determined by the minister of national education number 78 in 2009. Unfortunately, there is one aspect that the school has not achieved the criteria yet. The mathematics teacher did not hold the master’s degree. Whereas, based on the regulation of the minister of national education article 78 in 2009, the teachers have to pass master’s program. It was because Mrs. Sayekti Reni as the mathematics teacher in SMAN 1 Krian did not have time to continue her study. She is an old woman and she will face the retirement.

2. **The struggle teacher in learning English**

The mathematics teacher in SMAN 1 Krian could be said as a heroine by the researcher because even though she gets older than her age, it does not make her enthusiast low in learning English. She is a mathematics teacher and hold bachelor degree in mathematics education, but she still has full of energy to learn other knowledge in her second childhood. She is interested in learning mathematics and English. She can speak English fluently and construct an English sentence perfectly although it is only a simple sentence.

In the learning process, she is facilitated by the equipments based on the communication and information technology (TIK). From those facilitations, she also can operate the equipment

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based on communication and information technology. She also reached the IBT TOEFL score of 75. All indicators above indicated that the teacher has fulfilled some criteria of OECD member or developed country which is explained in the regulation of the minister of national education article 78 in 2009 section 4.

3. The successful teaching

The research findings above which explained about developing the lesson plan, conveying the lesson, establishing communication and leading discussion showed the teaching process of mathematics in English. For the beginner teachers who do not as yet common in English, they will get some problems when they teach their subject in English. But that is not for skilled teacher like Ms. Sayekti Reni that still had a power spirit to explore the knowledge more in her second childhood.

In developing the lesson plan, the teacher did not get problem in using English instruction because she was active in asking to the expert when she found some problems. When the teacher conveyed the lesson, she mostly enjoyed teaching mathematics in English because she had capability in the learning. She is active in consulting to the expert before teaching the lesson. The lesson was still progressing even though she got difficulty in her speaking.

In establishing communication and leading discussion, the teacher focused on the student speaking. She began the topic to make the student active. She used a simple language and asked to the expert when she got difficulty in her speaking. Therefore, the way of how the teacher coped that problem is using simple language and consulting to the expert.

The problem of teaching which was faced by the teacher emerged in the learning process because English mathematics has the complexity in its language. The teacher has to describe the word function of mathematics before solving the mathematics problem.

7 Ibid. section 4.
According to Faizah\(^8\), “The language of Mathematics is complex and is not similar to everyday language. It consists of specialist vocabulary, precisions and the use of symbols. Students learning Mathematics have to identify the word function before they are able to identify how mathematical problems can be solved. They also have to verbalize mathematics statements, putting words to symbols and graphs. They also have to work with lengthy descriptors and dense mathematical concepts.”

According to Hakannson\(^9\), “Comparing general English with mathematics English emerges the different meaning of concept in its word when they are constructed.” The argumentations above indicate that teaching mathematics in English instruction was seen complicated to conduct. However, it will be supported if the subject of mathematic is handled by the competent teacher who uses a good strategy to help teachers deal with the language complexity of Mathematics like mathematics teacher in SMAN 1 Krian.

4. The student’s positive responses

The research finding above also indicated that the students’ responses implied into some points. They are students’ convenience, comprehension, passion and score. All points mostly gave good responses to the teacher when implemented the learning process of mathematics lesson in English. These success and achievement were discovered when the teacher were able to develop the mathematics concept of students in the learning process. According to Lynne\(^10\),

“Mathematics teacher, who provides English instruction to students, has to ensure that his students are able to increase their learning while they are in the process of learning English. Thus, the teacher integrates the study of English vocabulary and grammatical structure while building the mathematical concept.”

The positive response had been showed by the students when the teacher applied some

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\(^{8}\) Faizah Mohamad Nor, Ph.D ETiEMS: “The Implications on Learners”, (www.iium.edu.my/ilc.pdf, accessed on July 30, 2011)


strategies to increase the positive response and made mathematics more understandable to the students. For example, creating predictable classroom routines, using consistent format for assignments, worksheet and test, giving directions step by step (orally and writing) before assigning students to do the task independently, in pair, or in group. Some strategies had been conducted by the teacher which was relevant with what De Marry Jo Lynne provided in the chapter 2.\textsuperscript{11}

\textsuperscript{11} Ibid.
CHAPTER V
CONCLUSION AND SUGESTION

This chapter presents some conclusions and suggestions that are derived from the research findings and discussion. The result of the data analysis could be concluded as the following:

A. Conclusion

Based on the findings which have been described and explained in chapter four, the researcher provides some conclusions in this research:

1. The teaching problem faced by the teacher when implementing her mathematics lesson in English almost never happened in the learning process. Based on the interview and observation sheet that were derived from the teaching and learning process, she enjoyed and had fun in her teaching. Also she still tried to study more even though she got older. She only got problem when developing long sentence but quickly it could be solved by asking to the expert before the class began. Therefore, the learning process of teaching mathematics in English ran well.

2. Most of students gave good response to the teacher when implementing the learning process of mathematics in English. Based on the questionnaire, observation and documentation that were derived from the students and the learning process, they showed respect to the teacher when the learning was happening in the class. It happened when they felt convenient in learning, they were active when the learning was progressing, and also they achieved excellent score of their mathematics exercises in the class. Thus, the students had good responses when teacher implemented mathematics lesson in English.

In addition, the school and the teachers of SMAN 1 Krian Sidoarjo, almost applied the
various standards of pilot project of international standard school which is going to reach the international standard school. However, there is one aspect that is not achieved. The teacher only graduated from the program of bachelor degree. The regulation of the minister of national education article 78 years 2009 mentioned\(^1\) that “headmaster and educators must hold minimally master’s degree in their subject”. According to suyanto,\(^2\)

>“Salah satu faktor utama kegagalan dari setiap sekolah adalah sumber daya manusia (SDM). Yakni, minimnya komposisi guru berjenjang strata dua (S-2) di sekolah-sekolah RSBI tersebut. Padahal, itu merupakan salah satu syarat utama untuk menjadi SBI.”

“One of the main factors of the failures at the schools is human resource. The minimum of the teachers hold master’s degree in their school. Whereas, it is one of the main requirements become international standard school.”

Based on some conclusions that have been explained previously, the researcher provides some points that the use of English is not applicable to be implemented in teaching mathematics by Ms. Sayekti Reni W S.Pd. It means that the school has not been applicable to be international standard school (SBI) yet, because the school has not applied all criteria or indicators of international standard school yet. Even though the program of minister of national education still goes on, Muhammad Nuh\(^3\) states that, “Kegagalan dalam satu lulusan tidak berarti gagal secara keseluruhan.” “The failure in one graduate does not mean getting failure in totality.”

**B. Suggestion**

At the end of this study, the researcher gives some suggestions. There are four parts of suggestion. They are for the school of SMAN 1 Krian, the teachers and the students of SMAN 1 Krian, and the future researcher.

1. The school of SMAN1 Krian

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\(^{2}\) Suyanto, “Program RSBI Gagal Total” (Jawa Pos, 4 Januari 2012) 15.

\(^{3}\) Muhammad Nuh, “nuh: RSBI Jalan Terus” (Jawa Pos, 5 Januari 2012), 1
The school of SMAN 1 Krian should give an English training continuously to the teachers. It is expected to have good teachers like Ms. Sayekti Reni who has good English language proficiency. Moreover, if the school has young teachers who produce many creative concepts in the learning, it will be interesting to the students.

2. Teacher

Teacher should be more creative to make the lesson interesting and easy to the students to understand. Besides, the teacher should improve their learning in developing complex sentence to make her more confident when teaching in the classroom.

3. Student

The students should prepare themselves to study vocabulary of English mathematics before learning in the class. It is expected that students will understand easily when teacher explains the lesson.

4. The future researchers

For the future researchers who conduct research corresponding to similar problems, are expected to reform the weakness or complete this study, like the use of English for teaching non English subject matter.
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