

## **CHAPTER III**

### **METHODOLOGY**

#### **3.1 Introduction**

After discussing related theories to this research in chapter II, this chapter will provide the methodology of the research. This chapter will give information about when the researcher collects the data, where the setting takes place, who the participants are, and how the data are collected.

#### **3.2 Setting and Participants**

The study was done at one public secondary school in Pekanbaru at the academic year 2007-2008 which has been selected as RSBI for 2006 academic year. Since 2007 until now the school has done some preparations to be a RSBI. And the students in 2007 – 2008 academic years have been considered as an international class.

There were two main reasons why this school was chosen. First, there are four RSBI of secondary level in Pekanbaru. Two of them are public senior high school, one is public Islamic high school, and other is private Islamic high school. At first time, the research would be in a public senior high school and a public Islamic high school. Because of the difficulties in getting research permit letter from Education Department of Riau Province, the research was held in a public Islamic high school

only. Fortunately, the school is the place where the researcher works as a teacher. Second, because the researcher is teacher in the school she has a close relationship to all teaching staffs. This condition was good in creating the smoothness of the research.

This research was done from April 16 to Mei 25, 2009. The headmaster, all teachers, staffs, and students of the school gave much contribution and attention so that the research has been done successfully as expected.

The participants of this research were one mathematics teacher, three science teachers, and three classes of the eleventh year students of science program of public Islamic high school. To focus the research, purpose sampling was done. Purpose sampling allows us to choose a case because it illustrates some feature or process in which we are interesting (Silverman, 2005).

There were 76 students in the three classes and all of them were taken as the participant of this study. These classes had been chosen based on the researcher informal interview with headmaster and vice headmaster. These classes were suggested because they have used English as a medium of instruction in learning science and math since 2007.

### **3.3 Research Design**

The study employed a qualitative descriptive case study design. A case study had been chosen because as this study observed a school and it also found out the teachers' and students' perception of using English in teaching learning science,

which is in line with definition of case study that observes the characteristics of an individual unit – a child, a clique, a class, a school or a community and attempts to shed light on a phenomenon by studying in depth a single case example of the phenomena (Cohen and Manion, 1994 and Gay, 1996).

The descriptive method was used to describe the data during research and then tabulate. This method seems suitable to present the result of this study and to interpret the facts that were found in this study (Gay, 1987 in Haris, 2007). As quoted by Haris (2007) from Nasir (1983), he says that the characteristics of descriptive method are focused on the concentration how to solve the actual problems.

### **1.3.1 Data Collection Techniques**

Data collection is as a series of interrelated activities aimed at gathering good information to answer emerging research questions (Creswell, 1998). In order to collect the necessary data, the study used questionnaire, interviews, and classroom observation. According to Cohen and Manion (1994) the use of two or more methods of data collection in the study of some aspect is called multiple technique or triangulation. The reason of using triangulation according to them is the more the methods contrast with each other, the greater the researcher's confidence.

#### **3.3.1.1 Participants or Research Object**

The respondents of this study are three science teachers and one math teacher and 76 of students of 2008-2009 academic years from three different classes at RSBI.

### 3.3.1.2 Classroom Observation

Classroom observation technique is used to collect the data that are related to human being behavior, working process, natural signs, and the respondents are not too big (Sugiyono, 2006). Observation is a primary source of data in qualitative research (Merriam, 1998; Silverman, 2005) but this research needs observation as supporting data to see whether English is used in science and math class as an instrument of communication. So this technique will answer the first research question and it shall also reflect the honesty of students and teachers in answering the second and the third research questions.

As Nunan (1989) states that if we want to find out about classroom it is very important for us to do direct observation. The researcher needs to spend time looking in classroom. Since this research is trying to investigate the phenomenon of the use of English in teaching science and math in the classroom, then doing classroom observation is appropriate. And non participant observation was employed in this research.

In doing this research, the intensive classroom observation was conducted three times for each class in the third until the fourth week of May 2009. During classroom observation, the researcher sat among the students observing *teacher activities, students' feedback, teaching learning process, and taking notes on teachers' steps, teachers' attitude, teachers' skill, and students' responds in conducting teaching-learning activities*. The purpose of this was to see how the

teachers implement the use of English in teaching sciences and math and the feedback is given by students and this purpose seems related to Alwasilah (2003) and Merriam (1998). They state that detailed descriptions of respondents' activities, behaviors, and actions will be recorded in observation and classroom observation also see directly interaction process between teachers and students during teaching and learning process.

To do an accurate classroom observation, the classroom or teaching learning process was observed when science and math teacher were teaching their subjects to the students. Checklist and field notes were used in the observation (see appendix 1, p. 78). And this technique was used to answer the first research question.

### **3.3.1.3 The Questionnaire**

In finding the answers of the second and the third research questions, the Likert scale (Dornyei, 2003 and Haryati, 2007) questionnaire utilized in this study comprises eleven questions for the students and ten questions for the teachers. The reason of using Likert scale is because the method is simple, versatile, and reliable (Dornyei, 2003). All of these questions were developed based on the research questions that had been composed based supervisors' suggestion. Questionnaires were given to the students to know their opinions about the use of English in teaching and learning sciences and math.

Questionnaires were distributed to the students and the teachers after doing classroom observations (see appendix 3, p. 82). This was done to see whether the

teachers and the students had done in teaching learning process reflected in answering the questionnaires and it also reflected the observation result. The questionnaire asked the teachers' and students' perception of the use of English in teaching and learning science and math and their perception of their readiness of being part of RSBI program.

And before they were given to the students, the researcher explained to them about the use of the questionnaires that were going to be filled by them. During the activity, the researcher stayed in the classroom to watch the students who were answering the questionnaires. This activity took about 20 minutes in each class.

In other side, the questionnaires for the teachers were given individually outside the classroom (see appendix 2, p. 80). The researcher gave flexible time to the teachers to fill in and then collect the questionnaire sheets. All the students and the teachers did not find difficulties and problems in answering the questionnaires.

#### **3.3.1.4 The Interview**

A week after collecting questionnaire data, another method of data collection, Interview, was used. According to Emilia (2008 in class presentation) quoted from Cannell and Kahn in Cohen and Manion (1994) said that research interview is a two-person conversation to obtain research-relevant information and focus on content specified by research objectives and research questions.

Interviews in this study were important means of helping participants articulate their opinions or perceptions about the use of English in teaching and



learning science and math and their feelings being bilingual or international class. Interviews in this study also played an important role to enable the research “to check the honesty and the accuracy of – to verify or refute – the impression from the previous technique (Freakel and Wallen, 2002 and Gendroyono, 2008).

This semi structured and open-ended interviews (see appendix 4, p. 84) were applied in answering the second and the third research questions. The questions were about: *students’ and teachers’ opinion of English, students’ English score, the effectiveness of using English as means of instruction in sciences and math class, the frequency of using English by the teachers, the felling of being bilingual class, the important of using English as means of instruction, and the readiness of the school as RSBI.* The 7 questions were followed by subsequent questions which were conversational, and they were used to support the question from questionnaires and the result of observation. The interviews were also recorded. Thus, all of the recorded interviewees’ contribution were analyzed and transcribed.

#### **3.3.1.4 Procedure of the Study**

The procedure of this study was started by doing class observation. This type conducted twice for each class and each teacher in two weeks before giving questionnaire and interview. During class observation, the researcher sat at the back of the class observing teaching learning process and taking notes on teachers’ mastery of English, students’ attitude or feedback, and teaching learning activities. The purpose of observation is to see how far the teachers and the students play or run the

role of being international class and whether they are serious in using English in teaching learning process.

After collecting data from observation, the following technique was questionnaires that were given to teachers and students. The questionnaires have been developed based on the research questions in order to find out teachers' perception or opinion of using English in explaining the materials. Next, the questionnaire would give contribution to find out students' perception or opinion of using English in learning the subject. All questions of questionnaire will be enclosed in appendix pages.

The last, interview was carried out after giving questionnaire. The interview supported the questionnaire. The interviews that had used were semi structured. It was applied to find out students' perception. Semi structured interview was used because the researcher has general idea where the interview should go and what should come out of it (Nunan, 1992). And besides that, the respondents were 15 students of 76. So, the researcher had enough time to make individual conversation or individual interview with them.

### **3.3 Data Analysis**

The data of this research were analyzed through qualitative data analysis. It was immediately conducted after the data from classroom observation checklist, questionnaire, and interview transcription were available. All data were analyzed based on the research questions stated in chapter one.



In order to protect the identity and confidentiality of the participants, the data were analyzed based on the item of each questions not on the individual of participant, for example, the researcher counted how many respondents answered item number 1, number 2, number 3, and so on. At the last, the percentage of the data was taken based on the standard formula. All data analysis can be seen in chapter IV.

The data from classroom observation was analyzed to figure out whether teachers and students implemented what they knew about bilingual or using English as a medium of instruction in teaching and learning science and math. The data were divided into three phases of teaching learning process: pre-teaching, while teaching, and post teaching. Each phases had different activities that were observed. Some of criteria in observation sheet also supported research question number two and three. And the data will be explained clearly in chapter four.

The data from questionnaire and interview were analyzed to answer the research questions concerning teachers' and students' perception of using English as a medium of instruction in teaching and learning science and math. The questionnaires were distributed to the teachers and the students but the interview was distributed to the students formally not for the teachers. This was happened because the researcher felt that the students who answered the questionnaire was little beat not fear. So, the researcher gave additional technique of data collection to see the fairness of the students and interview was organized. Meanwhile, the interview was not addressed formally to the teachers because they had much informal talks with the researcher during the school have been chosen as RSBI. Some participants' responses

in questionnaire supported the first research question. And all data from questionnaire and interview will be clarified in chapter four.

