

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

Education is facing the external world challenges such as work challenges, competencies, public perception, the development of knowledge and pedagogy, and other negative phenomena which will appear in the near future. Future challenges include the ability to use the English language in the fields of science, including physics and technology. The use of English in Physics learning is a controversial issue that has created a conflict on education in Indonesia. It is usual to hear that learning Physics in the English language is difficult. This problem arises because the students have to read only the bilingual course books for learning Physics. Many schools in Indonesia have implemented a bilingual learning system, and the teachers have difficulty in implementing bilingual learning, especially in physics. The difficulty lies primarily on physics teachers' low mastery of English language components (vocabulary and grammar) and skills (listening, speaking, and reading).

In recent years, computers have been widely used for physics learning in the classroom. Physics teachers are, however, more likely to teach using Power Point slideshows in Indonesian language than English language. Indirectly, the slideshows that are presented can make the students feel bored and lazy to take notes. Therefore, it is necessary to develop an instructional media equipped with audio and visual features which can attract the students' attention and motivate them in studying Physics in English.

Since the 21<sup>st</sup> century, computers have been frequently used in the classroom. Learning with computers as the media is known as “Computer Assisted Instruction” or CAI. This method emphasizes learning through software that can be accessed in a computer where the user can directly interact with the media. Learning materials that have been programmed simultaneously present various components of the image, text, animation, colour, and sound.

With the increasingly accessible technology, more schools in Indonesia are now consciously preparing their students with skills such as critical thinking knowledge, the use of technology for learning, real world problem solving, and also communication. Critical thinking knowledge enable the students to think critically in the classroom, solve problems and make decisions using a variety of digital tools and resources. The use of technology for learning allows the students and teachers to discover and use new knowledge in the world. Real world problem solving gives students real phenomenon or experiences in creating and using knowledge beyond the classroom. Communication leads the students to communicate effectively in orally and writing, with a variety of digital tools and listening skills.

One of the subjects in physics lessons that is considered difficult is Fluid Dynamics. Some students feel hard to imagine how the theory works. They need images, animations, even phenomenon videos to easily understand the theory. A lesson that can combine text, animation, and videos actually can be provided by making a learning media. Through a bilingual learning media, students are exposed in learning physics that is presented in English language and featured with animations and videos illustrating the processes involved in the phenomenon.

By using bilingual learning medias, students are also expected to improve their English skills components through the English vocabulary by listening and reading. With those features, teachers and students can learn English words that are translated into Indonesian. In this case, they can practice their listening and reading skills.

On the basis of the rationale above, the researcher conducted research on the development of a learning media that can assist students in studying bilingual physics. Therefore, the proposed media is entitled **Developing Physics Bilingual Learning Media “VOCARELI” on Fluid Dynamics for Senior High School Students.**

## **1.2 Statement of the Problem**

The problem of this study is “What kind of Physics Bilingual Learning Media that can help Senior High School students in studying Fluid Dynamics and improve their English skills?”

## **1.3 Objectives of the Study**

Based on the problem above, the objectives of the study are formulated as follows:

1. To develop VOCARELI Bilingual Learning Media.
2. To strengthen Senior High School student’s comprehension on Fluid Dynamics.

#### **1.4 Key Performance Indicator**

1. The VOCARELI Bilingual Learning Media can be produced.
2. At least 70% of the users agree that VOCARELI bilingual learning media can help improve their English skills components and understanding of Fluid Dynamics.

#### **1.5 Significances of the Study**

The Bilingual Learning Media can be used by students, teachers, and schools. The benefits of that media are mentioned as follows:

##### **Benefits for students:**

1. Student can be motivated to study Physics more diligent through the learning media which provide animation and videos phenomenon about fluid dynamics.
2. Students can increase their English language skills through the vocabulary, reading and listening system that is provided in the media.
3. Students can gain a better understanding about the phenomenon in daily life, especially related to fluid dynamics.

##### **Benefits for teachers:**

1. Teachers can easily teach the bilingual Physics topic to student and also provide sufficient examples in everyday life.

2. The bilingual learning media can provide inspiration for teachers to be able to make another bilingual instructional media which is related to daily phenomena.

### **Benefits for schools:**

1. The bilingual learning media can be archived to be used by another teacher in making bilingual instructional media for certain subjects.
2. The bilingual learning media increases the number and varieties of learning resources, especially in a learning that utilizes computer technology.

## **1.6 Scope and Limitation of the Study**

The scopes and limitations of the study are:

1. The physics topic to be included in VOCARELI Bilingual Learning Media will be limited to Fluid Dynamics at the level of Senior High School.
2. The main program to develop the bilingual learning media is Macromedia Flash Pro 8 and Cyberlink Power Director 12.

## **1.7 Definitions of the Key Terms**

1. Bilingual learning media is defined as a media that takes the advantage of computer technology to present a lesson in two languages (Indonesian and English).
2. VOCARELI stands for VOCAbulary, REading, LIstening. It is a learning media that is designed to present a bilingual lesson

material that combines text, picture, animation, dictionary, video and a listening system.

3. Dictionary is the list of all the words used in the lesson material. It translates the words from English into Indonesian and serves as a guide to pronunciation.

## **1.8 Organization of the Thesis**

The thesis consists of the following chapters:

### **CHAPTER I: INTRODUCTION**

The first chapter contains the Background of the Study, Statement of the Problem, Objectives of the Study, Key Performance Indicator, Significance of the Study, Scope and Limitation of the Study, Definition of the Key Terms, and Organization of the Thesis.

### **CHAPTER II: REVIEW OF RELATED LITERATURE**

The second chapter belongs to the body of the thesis. It discusses Bilingual Education, Multimedia, VOCARELI Bilingual Education, Vocabulary, Listening, Reading, Advantages of Reading, Fluid Flow, The Continuity Equation, Bernoulli's Law, Torricelli's Principle, Venturimeter, Pitot Tube, Lift Force on an Airplane, Mosquito Sprayer, Review of Related Works, and Research Framework.

### CHAPTER III: METHODOLOGY

The third chapter consists of Research Method, Research Subjects, Research Instruments, Data Collection Procedure, and Data Analysis Techniques.

### CHAPTER IV: RESULT AND DISCUSSION

The fourth chapter consists of the result of the development of VOCARELI Bilingual Physics Learning Media and the discussion on the data analysis.

### CHAPTER V: CONCLUSION AND SUGGESTION

The fifth chapter concludes the report on the development of bilingual learning media and brings about the suggestion relevant to the development of the bilingual learning media.