# CHAPTER I

# INTRODUCTION

## 1.1 Background

Education is the most important thing for every country to be able to develop rapidly. A great country will place education as its first priority, because with education, poverty in the people of that country will be replaced by welfare. Education, curriculum and learning have very important attachments, especially in an institution. The learning process that using the 2013 curriculum looks like students are more active and passionate in learning. In this curriculum students are expected to be more critical and independent in the learning process (Kurniawan and Noviana, 2017).

Chemistry is one of the main subjects in secondary education. Learning chemistry is one of the branches of Natural Sciences that seems difficult. One factor that makes learning chemistry seem difficult is that some concepts in chemistry are abstract and caused by chemistry having a special vocabulary, where studying chemistry is like learning a new language. In addition, in learning chemistry there is an understanding of concepts, calculations and memorization (Ristiyani and Bahriah, 2016).

The using of learning media is one way to support the achievement of learning objectives. The using of appropriate and varied media in the learning process can increase learning outcome and can reduce students' passivity. Learning media must be packaged attractively so students can linger learn a learning material. Learning media that are often used in schools include power points, learning videos, text modules. But the learning media cannot be used at any time by students. The lack of variety in the media distributed is not solely the teacher's fault, but because it lacks optimizing technological development.

Technology development at this time has been developing rapidly, especially in information and communication technology. One of the products of its development is a smartphone. The operating system at this time that is very popular is the Android operating system. Android is a mobile operating system that adopts the Linux operating system, but has been modified.

The information technology research company announced the results of research for global smartphone sales in the second quarter of 2015 showing that Android and iOS are still strong in this business. Asmany as 319 million units of Android and iOS devices represent 96.8 percent of the market share, and Android still dominates the smartphone operating system market with 82.2 percent or sold around 271 million units. This proves that users of smartphones especially Android are very large.

The more users who have and use smartphones, the greater the chance of using ICT products in the world of education. One such opportunity is learning media in the form of e-Worksheet that utilize mobile or mobile devices such as smartphones to provide learning benefits that can be accessed flexibly. This worksheet that based on Android  is used to improve students' knowledge and skills in the basic competencies of stop motion animation. The presence of this e-Worksheet provides an opportunity for students to learn material that is not mastered wherever and whenever and provides a means of questions that must be done by students (Ramadhani et al, 2016).

The results of research conducted by Rina Cholifah and Setya Chendra Wibawa show that (1) Android-based student worksheets are categorized very well with a percentage of 85%. (2) The students' responses were categorized as very good with a percentage of 86.42%. (3) The learning outcomes of the experimental class students are better than the control class, it can be seen from the average experimental class learning outcomes on the cognitive test is 89.97 and the control class is 78.31. While the average learning outcomes of the experimental class on the psychomotor test was 89.90 and the control class was 79.83 (Cholifah and Wibawa, 2016).

Based on the description above, the researcher wants to develop learning media in the form of e-Worksheets as teaching materials that are tailored to the needs of students so can facilitate students to understand the material to be studied. Therefore, researchers are interested in conducting research entitled **"THE DEVELOPMENT OF e-WORKSHEET ON CHEMICAL BONDING TOPIC INTEGRATED PROBLEM BASED LEARNING (PBL)"** using the Research and Development (R&D) method.

**1.2     Identification of Problem**

From the background that has been statedsocan be identified some problems, as follows:

1.  Chemistry subjects are considered as difficult and abstract subjects.
2.  Involvement of students in the learning process is still lacking.
3.  The learning process is boring due to the lack of variations in teaching methods by the teacher.
4.  Student worksheet that have been used by students, have not been able to help students' understanding of Chemistry material.

**1.3     Scope of Problem**

The scope of problem in this research, are :

1.  Media to be developed in the form of e-Worksheet.
2.  Topic that will presented by e-Worksheet is Chemical Bonding
3.  Quality assessment of e-Worksheet by using Program Based Learning in terms of thefeasibility of e-Worksheet that are developed.

**1.4.    Formulation of Problem**

The formulation of problem in this researchare:

1.  What are the results of the Worksheet analysis that are available?
2.  How is the feasibility of e-Worksheets' development resultbased on the BSNP criteria?
3.  Are the learning outcomes of students who use e-Worksheethigher than the learning outcomes of students who use Power Point?

**1.5     Research Purposes**

Research purposes from this research, are for :

1.  Knowing the results of theWorksheet analysis that are availableon Chemical Bondingtopic.
2.  Knowing the feasibility of e-Worksheets'development result on Chemical Bonding topicbased on the BSNP criteria..

3.  Knowing the comparison between student learning outcomes using e-Worksheet and student learning outcomes using Power Point on Chemical Bonding topic.

## 1.6 Research Benefits

Expected that the results of this research can be useful for all parties involved, as follows:

1.  For Researchers

    Can increase knowledge in developing e-Worksheets and gain special experience in conducting research.

2.  For Teachers

    Can foster teacher creativity in the learning process and get inspiration related to research.

3.  For Students

    Becoming more motivated in following the learning process and through e-Worksheet research can increase students' understanding on topic Chemical Bonding.