CHAPTER I
INTRODUCTION

1.1 Background

The development of innovative learning material with project on the teaching of redox titration is very important. It could encourage the students to the desired knowledge and skills (Trifilova, Bessant, and Alexander, 2016). Innovation in the teaching and learning activities is needed to motivate the students to acquire efficient and effective study, learning and professional skills (Almuqdadi, *et al*. 2016). An innovation has an advantage when it appears to be better the previous generation and has a high rate of adoption. It also has a greater chance of getting adopted if it is compatible with people's experiences and values. Innovation in Chemistry learning material is compulsory to obtain good quality learning material that can be used to assist the students in the learning process and to enable them to understand the subject easily (Situmorang, *et al*. 2018)

Innovation in teaching and learning activities is very attractive to discuss, as it is assumed that implementation of the right teaching strategy would increase student's achievement in learning chemistry (M. Situmorang and A.Situmorang, 2014). Improving the characteristic of education could be carry out through innovation in the teaching and learning materials. The strategies to improve chemistry teaching and learning process have been performed, containing the variation in learning methods and models (Chamizo, 2013; Jahangiri and Hajian, 2013; Mari and Gumel, 2015).

Learning activities are organized into modules should be practiced by learners independently and able to develop their active process. Learning activities that develop an active process can be prepared by incorporating elements scientific approach of the curriculum 2013. The preparation of learning activities that accordance with a scientific approach, can be applicated easily because more coherent and logic (Taufiq, *et al.*, 2014).

Nowadays, the development of science and technology is very fast, including chemistry, but fast advances in chemistry are not followed by fast development in chemistry learning (Silitonga and Situmorang, 2009). According to Espinosa, Monterola and Punzalan (2013) the facts of the field show that students start a chemistry class with lots of hope, questions, and big interests that are not sustainable because they think the subject is too abstract and mathematical. The module is teaching materials that arranged systematically to achieve the competencies and specific objectives expected. A good module is a module with three components of appropriateness according to the Badan Nasional Standar Pendidikan (BNSP), which are the appropriateness in content, design, language and presentation (Millah, *et al.*, 2012).

The application of learning materials should be improved in line with curriculum development (Arlitasari, 2013). For more invigorate and innovative teaching materials, it is very important to make the other innovative learning material. One of that innovative learning is Project Based Learning (PjBL). PjBL is a student-driven, teacher-facilitated approach to learning. Learners chase knowledge by asking questions that have offend their natural curiosity.

Project-based learning examine the project not as an objective but as a means of suppressing aspects of the learning process rather than product aspects that can improve students' knowledge and skills (Robinson, 2013). Hosler and Boomer (2011) said that active learning with project motivated the students to learn, facilitate the learner to work together and results in deep understanding on the subject. Innovative learning materials will help the students to understand the concept of achieving desired desires be easy and repeatable (Simatupang and Situmorang, 2013).

Some previous researchers who have conducted relevant research on the use and application of innovative PjBL chemistry materials can help students in learning to achieve competence according to curriculum demands in their research. According to Sitaresmi, *et al*., (2017) in their research, the title is "Penerapan Pembelajaran Project Based Learning (PjBL) Untuk Meningkatkan Aktivitas Dan Prestasi Belajar Siswa Pada Materi Sistem Periodik Unsur (SPU) Kelas

X MIA 1 SMA Negeri 1 Teras Boyolali Tahun Pelajaran 2015/2016" indicates that PjBL can increase activity and achievement student learning. For the other research conducted by Desriyanti, *et al.*, (2016), in their research, the title is "Penerapan Problem Based Learning Pada Pembelajaran Konsep Hidrolisis Garam Untuk Meningkatkan Hasil Belajar Siswa" indicates that PjBL can improve student learning outcomes and creativity.

Innovative Project Based Learning materials in nowadays needs attention to improve learning outcomes, students cognitive, affective and psychomotorics. Based on the background, researcher is interested in conducting a study by innovative Project Based Learning chemistry materials entitled **"The Development of Innovative Learning Materials With Project On The Teaching of Redox Titration."**

1.2 Problem Identification

Based on the background, the identification of the problems of this study are:

1. Low students' understanding about the material.
2. Learning of innovative learning material is needed to support the transformation of conventional learning into student-centered learning.
3. Presentation of the material is complicated, less interesting, monotonous and boring.
4. The lack of availability of module with innovative learning that require students perform simple experiments.

1.3 Problem Formulation

Based on the background and identification of the problems above, then the formulation of the problem in this study are:

1. How is the strategy to develop the innovative learning material with project based on the teaching of redox titration?
2. How is the validity level of innovative learning material with project based on the teaching of redox titration based on BNSP?

3. How is the students' response to innovative learning material with project on the teaching of redox titration?
4. How is the students' activity using innovative learning material with project on the teaching of redox titration?

1.4 Research Objectives

The objectives of this research are:

1. To development an innovative learning material with integrating project to facilitate students in learning activities.
2. To produce standard innovative learning material with project to fulfil the feasibility standard on the teaching of redox titration.
3. To know students' response after using innovative learning material with project on the teaching of redox titration.
4. To know students' activity after using innovative learning material with project on the teaching of redox titration.

1.5 Problem Limitation

To focus the problem, the identification of the problem under study is limited to:

1. Develop project in innovative teaching materials in accordance with applicable curriculum requirements.
2. The material developed is redox titration namely, definition of redox titration and principle of Iodometry on redox titration.
3. Project in learning material will be reviewed and revised by chemistry lecturers and student until the project in an innovative learning material is available for to use.
4. Respondents know how the perception and improvement of learning by using the project in innovative learning material.

1.6 Research Benefits

Benefits of this study are as follows:

1. Increase knowledge and experience regarding the use of innovative learning material with PjBL that can generate interest and motivation to study about chemistry.
2. Learning material developed can be used as learning material for lecturers and students in implementing the process of learning in class.
3. As input for other researchers to create innovative learning material with PjBL in accordance with applicable curriculum demands.

1.7 Operational Definition

The Operational Definition in this study is intend to equate the view some of the terms used as the title of the study.

1. Development is an attempt to improve the technical, theoretical, conceptual and moral abilities in achieving a higher quality result than ever before.
2. Innovation can be simply defined as a new idea, creative thoughts, new imaginations in form of device or method.
3. Learning material is a learning component used as a learning material for students and assists lecturers in carrying out classroom learning activities.
4. Module is a set of teaching materials that presented systematically so it can learned without facilitator or teacher.