## **ACKNOWLEDGMENT**

Firstly, the greatest thankfulness is given to Almighty God, Allah SWT who always that gives blessing and provides health, wisdom, strength, spirit, knowledge and everything for writer in composing this thesis accordance with the planned time.

The title of thesis is "Comparison of Worksheet and Index Card Match as a Media on Collaborative Learning Model on Students' Learning Outcome in Learning of Buffer Solution Based on Lesson Study" that arranged to obtain the degree of Sarjana Pendidikan in Chemistry Department, Faculty of Mathematics and Natural Science, State University of Medan (UNIMED).

In this opportunity, the writer would like to express my thankfulness and great appreciation also big thanks for Dr. Zainuddin Muchtar, M.Si as my thesis supervisor for this valuable time spent in giving guidance, advices, motivation and suggestions during completing this thesis. The writer also thanks to Dra. Ani Sutiani, M.Si., Dr. Ir. Nurfajriani, M.Si., and Dr. Marham Sitorus, M.Si as examiner for this thesis that giving me advices, suggestion, guidance and constructive comments for this thesis's completeness.

The writer also say thanks to Dr. Asrin Lubis, M.Pd as the Dean of Mathematics and Natural Science Faculty, State University of Medan, Dr. Iis Siti Jahro, M.Si as the coordinator Bilingual Department, Nora Susanti, S.Si, Apt., M.Sc., and Mr. Syamsudin as administrator of Bilingual Office for their advices and other necessary administrative business. The great thanks are also given to Dr. Iis Siti Jahro, M.Si as my academic supervisor for this guidance during my academic process in this University. The writer also say thanks to Prof. Retno Dwi Suyanti, M.Si as my instrument's validator and media validator in this research.

The author appreciation also given to principal of SMA Panca Budi Medan. Rusdi Ramli, SE and also the teacher M. Akhyar, S.Pd. Also for all of the staff in SMA Panca Budi Medan.

A deepest love, appreciation and thank you so much also for my dearest parents Dharma Bakti and Nurviana Annas, BA also for my dearest brother Ottis Yudha Prawira Ramadhan, SP.d, for their motivation, advice, prayers and financial support to me during my university lecture process.

Special thanks are given to all my love classmate in Bilingual chemistry Education 2012 that always gives me the best memory in my education process and help me through this also. For my senior high school bestie those are Putri Swastanti, S.Gz., Laswita Indah Pratiwi, Siti Maryam Hanum, S.H., Anita Rizky Lubis, S.P., Fatya Ulfa, S.Psi thanks for motivate me and your infinity laugh, also for loving me. The last, thanks for my awesome cousins ever in the earth.

Finally, writer hope this can be used for those who would like to explore more about learning model in solubility and solubility product topic. The writer realize that this thesis is still far from being prefect therefore critique and suggestion are needed for further improvement of this thesis.

Medan, July 2016
The Writer,

Seruni Olivia Gita R

4123332018