PREFACE

First of all, let praise and gratitude for Jesus Christ my Almighty for everlasting love and blessing. No more words to express how I realize how great my God along my life especially to finish this thesis well.

This thesis entitled "The Implementation of Project Based Learning Model integrated with Lesson Study to Increase Student's Learning Outcome in Buffer Solution for Senior High School" was arranged to prerequisite to get Sarjana Pendidikan in Faculty of Mathematics and Natural Science State University of Medan.

This thesis couldn't be completed without any supports and services. So, I would like to express my greatest thanks to:

- 1. Prof. Dr. Retno Dwi Suyanti, M.Si as my thesis supervisor. Thank you so much for your assistance, your patience and your loyalty for guiding me in finishing this thesis. You are one of the best lecture in this campus.
- 2. Prof. Drs. Manihar Situmorang, M.Sc., Ph.D , Dr Ajad Sudrajat, M.Si , Drs. Jasmidi, M.Si as my thesis examiner for all your positive advises, suggestions, comments, guidance and corrections to complete and make this thesis better.
- 3. Prof. Dr. Ramlan Silaban, M.Si as my Academic Supervisor and my validator for research instrument who always guided me during the lecture in State University of Medan.
- 4. Mam Nora Susanty, S.Si.Apt., M.Sc who always support and always available to hear my story. You are the second mother actually for me.
- 5. Drs. K. Lumbantoruan, M.Pd as the headmaster of Senior High School (SMA) 11 Medan who had given me chance to do research in that school and for R. Togatorop, M.Pd as chemistry teacher who also support me to handle all the research in this school.

- 6. My special sincere gratitude and beloved for my best ever parent, The best man in my life, my best friend, my lovely father Darwinta Sinuraya who always care and treat me like a princess in heaven and also for my Wonder woman, my beloved mom Mastaria Ginting, A.Md who always gave me strong power and educate me to be a strong girl, she is the motivator for me to face all terms conditions and situation in God was sincerely. Thank you so much for your everlasting love, your pray, motivations, and sacrifices for me so I could complete my first degree in Sarjana Pendidikan (S.Pd). I felt lucky and happy become your daughter.
- 7. My lovely brother Raykisko Sinuraya for his pray and support me, my youngest brother Lieberman Sinuraya supported me quietly through his voice and kiddos action. And also my brother in law Dicky Sinuraya always care and gave me support everyday in completing this thesis.
- 8. My supporting system also Vitra Agno Cio Pangaribuan as my ex and my best friend for your patience, loyalty, and always support me when I was down in doing my thesis. This long distance friendship really been my moodbooster.
- 9. My bestfriend ever after who I always called the "Gilak" consisted of Yoga Kristina Ginting as the leader of faith, Putri Andrayani Purba as the Wonder Woman Motivator, Ayu Lestari Nababan as the most sweet creature and Grace Thresia Nainggolan as the Fast Worker of everything. Thankyou so much deeply for your assistance, patience, and all our worst to the best experience which always made me better and better during my life. I will always love you guys.
- 10. My supporter also from Lesson Study Squad (Andreas Situmorang, Feber Sintha Barus, Ade, Fadil, Rizky) and my roommate (Elsa, Yuni, Mikha and Gloria) who always assist me to be strong while doing this thesis and also for Josua Irwan Manurung for your mostly everyday Support and Motivation to make me have spirit doing this thesis.
- 11. For BilChem 13, the most attractive and full colour class, Rosyadi (Komting), Achen, Ugi, Lenong, Tante Lia, Grace, Ayuk, Yoga, Putri, Ami. All our moment

made me enjoy this class although the population is just 11 member. Thankyou for really short moment to be with you all, for 4 years we have done forever.

I hope this thesis would be useful and give many contributions for the reader's knowledge specially about the subject matter which is researched in this thesis. I have done maximally to complete this thesis, but I realized I'm only human who have many weaknesses so any suggestions and comments are welcomed to improve this thesis. Thank you.

Medan, July 2017

Yovy Ardianti Sinuraya

