

PREFACE

Praise and Gratitude the writer prays to Allah SWT. God Almighty for all His blessings so that the writer can finish this thesis properly according to the planned time. The thesis entitled "The Effect of Project-Based Learning Models on Students' Science Process Skills on Optical Tools at SMA Negeri 8 Medan" was prepared to obtain a Bachelor of Education (S1) in Physics Education, Faculty of Mathematics and Natural Sciences, Medan State University.

The writer realizes that this thesis is still far from being perfect, therefore the writer really hopes for input from various parties in the form of constructive criticism and suggestions for the improvement of this thesis. The process of writing this thesis is inseparable from the support of several people. On this occasion the author would like to thanks:

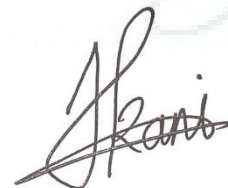
1. Mrs. Yeni Megalina, M. Si. as my thesis supervisor that who has given a lot of advice, motivation and suggestions to author from the beginning until the completion of this thesis.
2. Mr. Prof. Drs. Motlan, M.Sc., Ph.D, Mr. Deo Demonta Panggabean, S.Pd., M.Pd., and Mr. Irham Ramadhani, S.Pd., M.Pd as my examiners who have provided a lot of constructive input and suggestions in improving the writing of this thesis.
3. Mr. Mukti Hamzah Harahap, M.Si. as my academic supervisor who has provided advice and motivation began to receive authors in this Department of Physics.
4. Mrs. Erniwati Hawlawata, M.Si. and also to Mr. Abdul Rais, S.Pd., M.T., M.Si as the expert validator of my research instrument.
5. Mrs. Dr. Ely Djulia, M.Pd as coordinator of Bilingual class and Mrs. Dr. Techn Marini Damanik, S.Si., M.Si as secretary of Bilingual class who gave support during my study in Bilingual Class.
6. Mrs. Dra. Rosmaida Asianna Purba, M.Si. as Principal of SMA Negeri 8 Medan and especially to Mrs. Rosianna, S.Pd. as the physics teacher who helped and guided the author in conducted research at SMA Negeri 8 Medan.
7. All of the students of XI IPA 4 and XI IPA 5 SMA Negeri 8 Medan as my research sample who gave the chance to do this research.
8. In particular, the author would like to express her deepest gratitude to the people whom author really loves about especially to my beloved mother Mrs. Siti Fatimah Br. Damanik who never break up always give me attention and support and my father Mr. Didi Harianto, S.E who have helped me become a strong woman, and also to my siblings Sultan Aziz Maliqul Alam and Ajeng Putri Keishya Azizi who have given proper support and my uncle's family, namely Taufik Eza Alfi Azhari Damanik, S.T, they all that who always provide support in terms of material, motivation, advice and especially for prayer and affection so that the author can complete study at Universitas Negeri Medan.

9. The author would like to thank M. Ilham Fahrezi who always provides support in the form of motivation, advice and especially prayer and love for the writer to complete his thesis from the beginning of writing to the end at Medan State University.
10. The author also would like to thank to my lovely best friend Maulidatul Fadhillah, S.Pd who always guides me and provides support in the form of motivation, advice and especially prayer and love for the writer to complete his thesis from the beginning to the end, whose support is in every sheet of my thesis, Thank you very much for guiding me and helping me when in trouble, you are a fortune that God sends to me but not in the form of money.
11. The author also would like to thank to my lovely classmates Bilingual Physics Educations 2019 who gave me support for four years in the campus especially to “Kite Kite Je” (Rahma Disa and Novia Dwi Kristiani) for always be there for me and giving me unconditional love.
12. The author also would like to many thanks to friends from the same class in physics education that I have known and have just met, who have helped me when I had difficulties in working on my thesis (Akhirudin, Alwan Syarif, Nurhamidah, Rizka Isnaini, Wahyu Ananda, Ardiansyah, and others) your help, moments, and kindness I will always remember.
13. Thank you for LP2IM Unimed and HMJ Physics Unimed where I grew and developed in education, social affairs, and leadership for four years on campus.
14. *Last but not least, I want to thank myself for believing in me, I want to thank myself for working hard from start to finish, I want to thank myself for never stopping, I want to thank myself for always be a giver and try to give more than I receive, I want to thank myself for being strong and confident in myself, I want to thank myself for having the courage to do everything myself and I want to thank myself for always be myself. Thanks to Syahrani Anina Pratiwi for believing in herself, loving herself, and admitting to herself that she can be successful on her own feet.*

Finally, the author expresses his gratitude for all the support and assistance from various parties in order to complete this thesis. Hopefully this thesis can be useful for readers.

Medan, July 23th 2023

Author,



Syahrani Anina Pratiwi