

PREFACE

In the name of Allah SWT, the most gracious and the most merciful. Praise and gratitude to Allah SWT for all the mercy and grace, may sholawat and salam to our Prophet Muhammad SAW so that this thesis can be completed well. The thesis entitled “Effect of Problem Based Learning Model on Students Learning Outcomes In the Material of Work and Energy class X of Senior High School N 1 Tanah Pinem” was submitted as one of the requirements to obtain a bachelor’s degree (S1) of Physics Education Study Program, in Faculty of Mathematic and Natural Science, Universitas Negeri Medan.

The author realized that this thesis will not be completed without the support and guidance of various parties from the beginning until the end of the process of preparing this thesis. Therefore, through this opportunity, the author would like to say thank to:

1. Prof. Dr. Baharuddin, ST. M.Pd as the Rector of Universitas Negeri Medan
2. Dr. Ani Sutiani, M.Si. as the Dean of FMIPA.
3. Dr. Yuni Warty, S.Pd.,M.Si. as the head of Physics Department of FMIPA.
4. Mr. Budiman Nasution, S.Pd.,M.Si. as the secretary of Physics Department of FMIPA.
5. Prof.Dr.Derlina M.Si As my thesis supervisor who has given a lot of advice, motivation and suggestions to author from the beginning until the completion of this thesis.
6. Mr Prof.Dr.Makmur Sirait, M.Si., Mrs. Dr.Erniwati Halawa, M.Si., and Mr. Budiman Nasution,S.Pd.,M.Si as my thesis examiners who have provided a lot of constructive input and suggestion in improving the writing of this thesis.
7. Dr.Jurubahasa Sinuraya,M.Pd as my academic supervisor who has provided advice and motivation during the author’s college.
8. Mr. Rajo Hasim Lubis, S.Pd.,M.Pd.and Mr. Abdul Rais,S.Pd., S.T.,M.Si as my instrument validator who have provided advice for this thesis’ improvement.
9. Dr. Ely Djulia, M. Pd. As the coordinator of bilingual class

10. Aripin Silalahi, S.Pd., M.Si as the principal of SMA N 1 Tanah Pinem, Mr. Andi Karo-karo, S.Si. as the physics teacher who has provided information and guided the author in conducting the research.
11. All of the students of class X SMA N 1 Tanah Pinem.
12. My parents, Mr. Salmon Tarigan and Mrs. Devi br Perangin-angin. Thank you for all the sacrifices and sincere love given. He did not have the chance to experience education in college, but they always gave the best, tirelessly prayed for him and gave attention and support until the author was able to complete his studies to get a bachelor's degree. May you and your mother be healthy, long-lived and always happy. I love you
13. The author would also like to thank my boyfriend Josua Bastanta Ginting, my sister Vedrina Oktari br Tarigan, Yenni Prisca br Tarigan, Erin Natasya br Tarigan, Noviola br Tarigan, my classmates in Bilingual Physics 2019, especially Icak and Novia who are always ready to help in every process of this.

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 17th 2024



Silvani Br Tarigan

IDN. 4193322001